IN THIS ISSUE:
CHEMICAL LINEUP

FORBES

BUSINESS AND FINANCE

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MAY 15, 1954

Grown from molecules

Much of the growth of the chemical industry is based on the scientific rearrangement or modification of molecules.

An example of industrial expansion and development—from test tube to pilot plant to production and sales—is contained in the story of "cyanamid," American Cyanamid Company's original product. Among the molecular offspring of cyanamid are *melamine* and *acrylonitrile.*

Melamine has brought about revolutionary advancements, in both production and markets, for many manufacturing industries such as plastics, textiles, paper, leather, chemicals, and surface coatings.

Acrylonitrile, originally used as a key component in synthetic rubber, is now the basic raw material for a new group of synthetic textile fibers. It is also a base for the production of sulfa drugs, new mining chemicals, selective weed killers, case-hardening compounds for metals, fumigants, dye intermediates, and materials for plastics, soap, explosives, photography and other uses.

These two chemicals are but two examples of the broad service in chemicals that American Cyanamid Company provides for American industry.

AMERICAN Cyanamid COMPANY

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Long Distance calls now cost you less

Recent reduction in federal excise tax means a substantial saving for you on every Long Distance call

The reduction in the excise tax from 25% to 10%, voted by Congress, is good news for Long Distance users. It means that every Long Distance call – to anywhere in the country – now costs you less than it did before April 1.

Basic rates remain the same. What you save is the difference between the old and the new tax. Every bit of the tax reduction goes to our customers. The telephone company does not keep any part of it.

Now you can use Long Distance in your business even more profitably than before.

LONG DISTANCE RATES ARE LOW

Some typical examples:

Philadelphia to New York . .	**50¢**
Indianapolis to Cincinnati . .	**55¢**
Cleveland to Chicago	**$1.00**
St. Louis to Baltimore	**$1.50**
San Francisco to Washington .	**$2.50**

These are *daytime* Station-to-Station rates for the first three minutes. They do not include the new, lower federal excise tax of 10%.

BELL TELEPHONE SYSTEM

The new 1954 Chevrolet Bel Air 4-door sedan. With three great series, Chevrolet offers the most beautiful choice of models in its field.

Frankly, what would these people really say about the new Chevrolet?

We're frank to admit it. Most people really don't talk about cars the way the manufacturer would like them to.

So, we wouldn't actually expect those folks around the firehouse to comment about the new Chevrolet's "smoother lines and smarter styling." But you might well hear something like "Best-looking Chevrolet they ever turned out."

No one up there is likely to go in for technical engineering talk about "higher compression ratios resulting in increased horsepower and finer performance with outstanding fuel economy." But that new Chevrolet owner would probably point out the same things to his friends in his own words. Something like this, maybe: "This new Chevrolet's got a lot more stuff in it. And it's the easiest car on gas I ever owned."

And because Americans like and know their cars, the conversation could turn up facts like these: Chevrolet has the only Fisher Body in its field – and everybody knows Fisher is the number one automobile body. These smooth and easy Chevrolet brakes are really something special—biggest in the low-price field. This year's Chevrolet offers a complete choice of optional power features and controls,* including all the latest things to make driving easier and more convenient.

And when the talk turned to price, it would be common knowledge that Chevrolet is the *lowest-priced* line of cars. So, if someone said—"By George, I believe I'll drop around and see that Chevrolet dealer myself"—we think that's a good idea. Don't you? . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

*Optional at extra cost.

POWER STEERING AT A NEW LOW PRICE! More and more people are enjoying the ease, convenience and safety of Chevrolet Power Steering. Increased production to meet this growing demand makes possible a new low price. It's available on all models, optional at extra cost.

MORE PEOPLE BUY CHEVROLETS THAN ANY OTHER CAR!

SYMBOL OF SAVINGS
CHEVROLET
EMBLEM OF EXCELLENCE

FORBES

MAY 15, 1954 • VOL. 73, NO. 10

B. C. Forbes, Editor and Publisher

BUSINESS

Report on Chemicals:
"Mr. Chairman" 18
Chemical Progress 19
Forbes Lineup—The Major Chemical Producers 22
Petrochemicals 24
Heavy Chemicals 26
Sulfur 28
Fantastic Plastic 29
Agricultural Chemicals 32
Coal Chemicals 36

FEATURES

The Economy 6
Two-Line Editorials 6
Fact and Comment....*B. C. Forbes* 15
Reflections at a Launching .....*Malcolm Forbes* 16
Labor Relations...*Lawrence Stessin* 40
New Ideas 41
Forbes Business Index..... 48
Thoughts 58

FINANCIAL

Business Forecast.....*B. C. Forbes* 43
Investment Pointers *Joseph D. Goodman* 44
Market Comment.....*L. O. Hooper* 46
Stock Analysis.....*Heinz H. Biel* 50
The Closed-End Investment Company .....*Michael Kourday* 52
The Funds 54
Booklets 57

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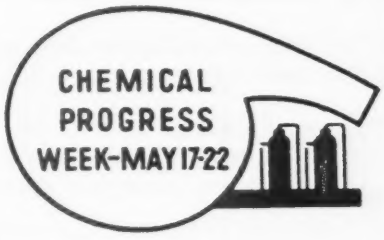
SIDE LINES

Industry's "Growingest" Industry



IN the decade after V-E Day, the phrase "growth industry" became a watchword among businessmen and investors. No part of U.S. industry was labeled with it more often—or more justifiably—than the progressive U.S. chemical industry. For boldness of risk, rapidity of expansion and immensity of rewards, it was the model of them all.

Like any too-often repeated catch-phrase, the term "growth industry" as applied to chemicals has nowadays lost much of its magic. So familiar has the industry's unparalleled growth record become that many otherwise knowing Americans now regard it as a chronicle of ancient times, dead and done with. Indeed, some pundits have already gravely written off the chemicals industry as having now largely reached maturity.

To FORBES editors, eyewitnesses in their travels to the mushrooming growth of U.S. chemical plant and resources, nothing is more striking than that the U.S. chemical industry, far from having reached maturity, is barely out of its adolescent years. Immense as has been the industry's growth since prewar days (a four-fold expansion), the end is not yet in sight. By 1975, by conservative estimate, the U.S. chemical industry will have grown still another 400%.

Perhaps because of its fabulous growth in the 1940s, the U.S. chemical industry's well-publicized past accomplishments have also paradoxically resulted in making its present-day expansion and future prospects for growth one of the untold tales of U.S. industry.

Next week, the Manufacturing Chemists Association, whose membership represents more than 90% of the U.S. chemical industry, with sales of more than $20 billion annually, is sponsoring Chemical Progress Week. Ordinarily FORBES editors, continuously bombarded with notices of countless special "weeks" by promotion-minded trade associations, are not sorry to let such events pass unnoticed. Not being a trade paper, FORBES believes that it can best fulfill its obligations to its 250,000 readers among U.S. businessmen and investors by omitting floral tributes, focusing instead on the significant news of business and finance that affects their pocketbooks.

Thus in breaking precedent to publish a special issue devoted to one industry's progress, FORBES editors have omitted fine phrases of congratulation. Instead they have measured the progress of 65 major companies within the chemical industry by statistical yardsticks that, in the case of some of them, may be uncomfortably exacting.

The results of this research appear on pages 22 and 23, where FORBES compares the actual performance records of major chemicals producers in terms of growth in stockholders' equity, profit margins before taxes, net return on invested capital, and percentage of profits paid out in dividends over the last five years. These in turn are converted into numerical rankings which show how each company's record compares with others in its class. Finally, the individual rankings are converted into a composite ranking in the last column.

For the larger picture of the industry's past record and future prospects, elsewhere our editors examine such topics as the industry's rate of growth, financing and debt management, research expenditures and special problems resulting from its great growth.

In an industry for which change is the ruling principle, new products and new markets are the stuff of survival. In individual studies, FORBES editors take a look in this issue at some of the most promising new frontiers of chemistry—plastics, petrochemicals, agricultural chemicals, coal chemicals. And finally, in its continuing "Mr. President" and "Mr. Chairman" series, FORBES turns the spotlight on a distinguished example of the type of leadership which has helped make the chemical industry U.S. industry's fastest-growing industrial group.

TWO-LINE EDITORIALS

Andrew Carnegie once declared: "Nobody can humiliate you except yourself."

The U.S. Senate is humiliating not only itself but every American.

The arbitrary ongoings of Sen. McCarthy are disgracefully lowering the esteem of America throughout the world.

Says the New York *Times* editorially:

The McCarthy method, full of sound and fury, has done grave damage to the sanity and security of the United States. Who is responsible for it? Mr. McCarthy, of course; but behind Mr. McCarthy and Mr. Cohn stands the majesty of the United States Senate.

With that we concur unreservedly.

He insists on interrupting, interrupting, interrupting domineeringly, brazenly flouts those heading the investigation.

For the sake of America he should be sternly put in his place, cut to size.

Chairman Mundt and Chief Counsel Jenkins should stop being cowed.

Isn't McCarthy now doing more damage to America than Communists have done?

Signs are that recession is receding.

Stock Exchange quotations have reached a new peak.

Total employment is not very far behind.

Savings are the best ever.

Easier money rates should stimulate enterprise.

Ditto easier tax burdens.

Doesn't the charge of "collusion" between General Motors and Ford impress you as unrealistic?

Do you know of any two industrial giants who are competing more strenuously?

Encourage small business, by all means.

But don't unwarrantedly throttle big business, mainspring of America's might, world leadership.

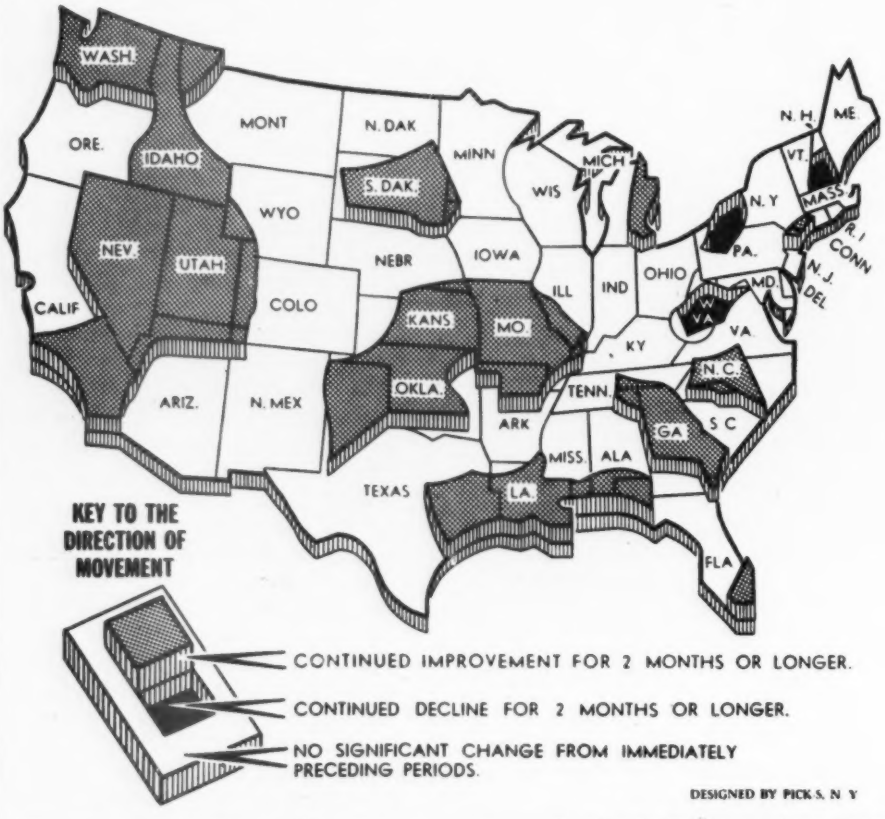
Be optimistic!

—B.C.F.

THE ECONOMY

THE map this month shows the influence of three factors: some real recovery in agriculture, some normal seasonal gain—and psychology. The psychology, of course, is the growing awareness of John Q. Citizen that the nation is not going into a deep slump.

The strength on the map is concentrated in four areas: the South; the Midwest and Central regions; the Middle Atlantic; and Pacific Mountain areas. Part of this improvement comes from the end of the drought, for most of these regions are agricultural rather than industrial. The Middle Atlantic area is sparked by New York City with its increased bank debits. Note the difference in the table when the city's inflating effect is excluded from the zonal and national totals.



Map shows business in 87 separate areas, each of which is an "economic unit" where conditions depend on the same key factors. The index reflects business as it was during the last week of April. N.B.—Area indexes require a consistent movement for two months to register an improvement or a decline.

Ten Best Cities

(Percent Gain Over Last Year)

New York, N. Y. (3)	12%
Sioux Falls, S. D.	10
Oklahoma City, Okla. (2)	8
Fort Smith, Ark.	8
New Orleans, La.	8
Cheyenne, Wyo.	8
Miami, Fla.	8
Dallas-Fort Worth, Tex.	7
Omaha, Neb. (4)	7
Tulsa, Okla.	7

(In parentheses: number of successive months listed in this column.)

Zone Indexes

(Percent Change From Corresponding Months Last Year)

	February	March	April
New England	−2%	−3%	−2%
Middle Atlantic*	+3	+2	+8
Midwest	−5	−7	+1
South	−2	−2	+3
North Central	0	−1	+1
South Central	−3	−1	+3
Mountain	−5	−6	+2
Pacific	−6	−3	−2
NATIONAL INDEX	0	−1	+4

*With New York City excluded, this area would score −5, −7, −4, and the National Index would be −3, −4, 0.

How much could you lose if you had to guess what your customers owe you?

Suppose your accounts receivable ledgers should be destroyed.

You wouldn't be able to mail out bills. You might not be able to collect on accounts you have already billed.

Only a memory good enough to re-create your records—complete with names, addresses and amounts owed—could save you from a long delay in making collections, and in the end, a substantial loss.

To make sure your business will never face this loss, you need Travelers Accounts Receivable insurance. With this insurance, you will be reimbursed for the money you are unable to collect because your records have been destroyed by fire, flood, windstorm, explosion or lost as a result of theft or burglary.

Ask your Travelers agent or broker to give you full details of Travelers Accounts Receivable insurance. Let him show you how this insurance makes certain that you'll never run out of ready cash because your account records are destroyed.

Ask your Travelers man also about insurance on your legal documents, blueprints, sales records and other valuable papers.

If you'd like the name of the Travelers man nearest you, just write.

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READERS SAY

They Cancel Over McCarthy

Cancellations are pouring in from Subscribers who resent our critical attitude towards Senator McCarthy. However, our condemnation of his dictatorial methods has, if anything, been strengthened by his conduct at the televised hearings.—B.C.F.

FOR McCARTHY

Please cancel my subscription at once. Your bigotry regarding Senator McCarthy renders your magazine useless to me.

—GEORGE V. R. MULLIGAN,
Washington, D. C.

Your asinine tirade against Senator McCarthy will be appreciated by the five traitors recently sent to prison by our Federal Court in Detroit. They are not, however, appreciated by me. Remove my name from your files at once.

—CLYDE V. FENNER,
Detroit, Mich.

Please cancel my subscription. I like anyone who will stand up and expose traitors to this Country.—J. B. FLAHERTY,
Brooklyn, N. Y.

Cancel my subscription at once.

—GEORGE A. CRITTENDEN,
Detroit, Mich.

I can do without FORBES, but not without McCarthy. Please cancel my subscription. —JOHN M. BURNS,
Brooklyn, N. Y.

The *Daily Worker* and the rest of the coddlers of the Communists all have the same bleat: "We don't like McCarthy's methods." I believe in fighting Communists in the same inhuman manner that they use all over the world—and double the treatment. Please cancel my subscription. —MARTIN DECKER,
Baldwin, N. Y.

We want no part of anything that B. C. Forbes is head of. —GEORGE A. BOSQUIT

It was a disappointment to read your comments on McCarthy. They indicate to me that your sources of information must be the "bleeding heart" commentators, and are therefore not factual. . . . The Army has too many officers who are too big for their britches. You should get your facts a little straighter. Sorry to see a financial magazine fall for that sort of propaganda.

—CARL E. BURCH,
Pittsburgh, Pa.

I am taking the liberty of sending you some of the "Hearings before McCarthy Committee," because . . . I know that you will have a great deal of sympathy towards McCarthy after you have finished studying them. —EDNA GIELICZ,
Inglewood, Calif.

I think you owe an apology to the American people for writing as you have about Sen. McCarthy. I am for giving him the power to deport all Communists and Communist sympathizers and coddlers.

—V. F. FISCHER,
Chicago, Ill.

I didn't think you were "pink" until I read the letters on Page 5 of your April 15 issue. Maybe McCarthy is a little brash, but he is doing more than you to show up the Communists. No true American has anything to fear from any investigation.

—MILO C. REYNOLDS,
Burlington, Vt.

I read that several readers object to your stand on "McCarthyism." Add my tiny voice, in which I say "Bravo."

—CLEO L. BROOKS,
Miami Beach, Florida.

The facts speak for themselves...

When it comes to investing, there's not much question about it.

Just put all the facts about any industry, company, or stock in front of the average investor, and nine times out of ten he'll come up with the right answer—for him.

That's why we devote so much of our time and effort here at Merrill Lynch to getting those facts—and giving them to investors.

For example, here are a few of the things we did — a few of the factual reports we made available to investors, last year.

More than a million Stock Appraisals — our single page summaries of vital financial information on the stocks of 56 major companies.

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In addition, our Research Department answered 65,000 specific questions about particular securities, analyzed over 20,000 portfolios for people who asked, and prepared over 100 investment programs a week to fit individual funds, circumstances, and objectives.

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Why I'm not renewing: Keep your McCarthy opinions to yourself; he stands for everything I am against. He slanders the Armed Services and you print editorials supporting the man.—CAPT. M. V. BROWN, M.C., U. S. Navy.

Two Agree With Us!

Glad you are sticking to your guns. Good for you! —LILLIAN H. FRIEDMAN, New York, N. Y.

McCarthy has lost a lot of supporters here in Wisconsin since the Army incident. We always thought Ike was a great General but have lost respect for him since he let Jumping Joe push the Army around . . . Do not use my name. You know what happened to people in Germany who wrote against Hitler. I only pray Ike will wake up before it's too late. —A SUBSCRIBER, Fort Atkinson, Wis.

Surprise: They Like Us!

I like your Business and Finance Magazine very much. In fact, before Mr. Porter's death we had all the Surveys, etc., and I consider yours the best.
—MRS. WILLIAM RANDOLPH PORTER, Miami, Florida

I have gained valuable knowledge from FORBES. Mr. Goodman's advice is a great asset to your magazine. I subscribe to three other business magazines, but I find a wealth of information in FORBES; therefore, I have entered a three-years' subscription. —ANTON LINDNER, Farmingdale, N. Y.

I look forward to receiving each issue with great enthusiasm—so much so that I have already sent you a three-year renewal. It has been gratifying to see FORBES "stick to" its usual method of reporting and editing regardless of what must certainly be a minority of dissenting letters in the "What Readers Say" section. Keep up the good work. —ARTHUR N. SPANO, Cumberland, Md.

Renews, But—

Since I am sending you a three-year renewal, I'll add a few lines. I read your magazine and see how often you are right and wrong on the markets. You have some good columns; however, I can't agree with some of your columnists in regard to politics and business. Mr. Goodman especially enjoys knocking the Democrats. He should realize that business never had it as good as under the Democrats.
—MARTIN J. LENICH, JR., Hillsboro, Ill.

Who Pay Taxes?

Regarding your article "Terrific Tax Payments," I am not too much concerned about the high taxes on large salaries. They were made large to allow for such taxes. Neither am I too much concerned about the inequitous taxation dividends. Selling prices carry both loads and the net is satisfactory. . . . I am concerned about your idea that these heavy taxes relieve smaller taxpayers. That is a fallacy, because selling prices pass them on to the

"only 237,630 more to fill before quitting time!"

A good day's work indeed! . . . and that amazing figure represents the number of barrels of liquid petroleum Cities Service refined every single day in 1952 . . . a total of 86,735,000 barrels! In that same year, the entire American petroleum industry produced 54.3 percent of all the crude oil produced in the world!

Obviously, the aggressive American petroleum industry is maintaining world leadership in this vital field and Cities Service, with its vast production, is an important contributing member of this great petroleum family.

We in the United States represent the largest users of petroleum products in the world but even more important is our position today as leaders of the free world. Only our great strength can assure that our world will stay free . . . and one of the most important segments of our freedom arsenal is the petroleum industry. Cities Service, one of the largest petroleum companies in the world, will continue to work toward finding new and better ways to serve the U. S. consumer . . . new and better ways to serve the cause of world freedom.

CITIES SERVICE

consumer and they are pyramided in the process. —HAROLD A. SMITH, South Bend, Ind.

You feel grateful to the large corporations for paying out enormous sums to the government in taxes, yet you have not a word of appreciation or comfort for me, a plain citizen, who supplies the money to the big corporations. I do it in paying a higher price for my car, my telephone, and everything else I buy. The big taxpayers are only tax collectors. Why give them all the credit?—WILLIAM WEBBER, Far Rockaway, N. Y.

I'm surprised, I am surprised, and from you of all people: to pass on in your editorial the old cliche that the giant earning corporations and the top bracket income group are carrying such a large share of the tax burden which might otherwise be borne by us smaller fellows. Where, I ask you, just where did you think the money came from out of which these titans paid their enormous taxes? Surely not from the trees that it doesn't grow on. . . . Who really pays these enormous taxes. Can it be anyone but the final consumer, you and I? —C. H. DUDLEY, Swampscott, Mass.

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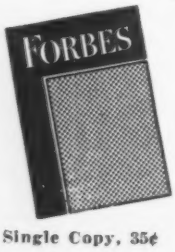
NEXT ISSUE

Report on Utilities. Despite its huge postwar growth, the U.S.'s electric power industry has thrown the switch to open a big new era of expansion.



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Cancels Over Our Young Stand

I don't think I want FORBES anymore. . . . R. R. Young is just a bag of wind who has a fancy public relations department. He is no railroader.

—ARTHUR T. KNOWLES, New York, N. Y.

William White has done 2½ years of quiet, effective work to build up the N.Y. Central with important improvements in motor power, rolling stock, roadway, new freight traffic, and has sought a court decision to settle the road's right to sell some of its real estate. All this has so improved the company's prospects that it now seems on the edge of a long period of deserved prosperity. Against him is now let loose a flood torrent of abusive propaganda by a self-seeker who wants to take over. . . . I know you want to tell the truth. May you be guided to the right answer and may you have the guts. —JAMES T. YOUNG, Philadelphia, Pa.

"Too Busy"

I note with interest your editorial, "Don't Say 'I'm too busy,'" in April 15 issue. I will cite you one instance of a man who was not too busy some 25-30 years ago. I used to attend meetings of the A.S.M.E. in New York. Among others attending were Mr. Kingsbury, Mr. Flowers of DeLaval, and Mr. Ralph Flanders, all tolerant of a young fellow who asked questions. Well, some years afterward, 1941-42, I heard Mr. Roosevelt was looking for a regional director of the War Production Board for New England. I wrote to him, and suggested Ralph Flanders for the job, saying, among other things, that he was a Republican because, coming from Vermont, there was nothing else to be, but he was a true democrat at heart, he had not lost the common touch. The President thanked me and a few weeks later Mr. Flanders was appointed.

—WM. P. LAMBERT, Col. U.S.A.R. (Ret'd), Plainfield, N. J.

I find I cannot go along with your statement "Don't Say 'I'm too busy.'" It is possible the secretary who said she was too busy was a better one than the girl who keeps on taking jobs. She may have had enough work to keep her overtime and still enough for another two days; also, she may not have been able to stay after quitting-time because of an important previous engagement. An executive or secretary who is continually working under tension and against time may not be producing at the optimum. There is a point of saturation and a downward curve of diminishing return. —ZENA LANKEWICH, A Secretary not afraid of work, New Brunswick, N. J.

Best

There is more "meat" in FORBES than all the "Advisory Services" put together. It is the best financial magazine published. There is no comparison. —H. L. BLITS, Ft. Lauderdale, Fla.

This is PowerFlite

Here's a no-clutch drive so *good* you won't believe it till you *feel* it . . . so *advanced* you should try it before you invest in *any* new car today! As one editor writes, "Chrysler Corp. has a winner in PowerFlite—smoothest and most simply constructed of fully automatic drives."

Just try it, in a Plymouth, Dodge, De Soto, Chrysler or Imperial, and you'll agree! Its sheer delivery of power, (*torque*, to an engineer) reaches 4.7 to 1. Breakaway and acceleration are superb. So is its "kick-down" surge of extra power.

It is the simplest automatic of all to use. No clutch pedal. Wonderfully simplified shift indicator positions. Extreme quiet and smoothness in up- or down-shift.

And it gives you pocketbook advantages, too. Being so simple, it is rugged, light in weight, has fewer parts. Long life is inherent in it. Service, if needed, is reduced in time and cost.

"Wonderful things keep coming your way from Chrysler Corporation." Now it's the most wonderful no-clutch drive of all. ***Won't you come in?***

Wonderful things keep coming your way from

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The 'copters are coming —

and thanks, in part, to Nickel they're stronger and safer than ever

HELICOPTERS can take off and land in a space not much bigger than their rotor blades.

Largely because of this, these whirlybirds are going to be called upon to handle a great deal of short-haul traffic between cities 250 miles or less apart, in the next decade or so.

They can also be expected to help reduce travel time between outlying airports and city centers.

These coming commercial 'copters won't be two- or three-seaters, of course. They'll be big birds, transport-size. Big, strong, rugged, *safe!* —thanks to the design and production "know-how" of their makers and to their widespread use of Nickel alloy steels.

Take the rotor hubs on the big, transport type of helicopters for example.

An engineer's nightmare, these hubs are subject to terrific stresses, extreme fatigue, severe shock loads. So, as in most of all the forged parts on this giant whirlybird, including the vital blades themselves, the designers make use of a rugged alloy steel containing Nickel.

Or take the major working parts of this helicopter's engines – crankshaft, cams, gears. In these, too, there can be no maybe about the metal used. For the sake of safety and dependability, it's a heat-treated Nickel alloy steel.

In 'copters, as in fixed-wing airplanes, Inco Nickel's role is an invisible one. Its identity is lost when it is alloyed with other metals to give them strength, toughness, or other special properties.

That is why Inco Nickel has come to be called "Your Unseen Friend."

You and "Your Unseen Friend": *Morning, noon and night, Inco Nickel is always with you—helping to make your life easier, brighter, more pleasant, more worthwhile. Just how? "The Romance of Nickel," an interesting booklet, tells you: Send for your free copy. Write The International Nickel Company, Inc., Dept.* ***184c,*** *New York 5, New York.*

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Inco Nickel ... Your Unseen Friend

The INTERNATIONAL NICKEL COMPANY, Inc.

"With all thy getting, get understanding"

FACT AND COMMENT

by B. C. FORBES

LET US STRIVE TO BE CALM

War is raging and wild alarums are rampant that mankind is threatened with an atomic Armageddon calculated to annihilate civilization. America is being sucked more and more dangerously into the deplorable Indo-China conflict. Moreover, our free Allies apparently are at loggerheads. The fate not only of Europe, the fate not only of Asia, but the fate of the whole world is daily pictured as trembling in the balance.

Yes, yes, yes, the world is out of joint!

Maybe I am out of tune. Maybe my thinking is antiquated. Maybe my instincts are wholly outmoded. Perhaps strangely, unreasonably, I personally persist in keeping calm. When I ponder the unholy practices and principles of Communists, their assassination of all human dignity, their promulgation of both mental and physical slavery, their abomination in the sight of God and man, I cannot for one moment doubt that they are doomed to defeat.

While admitting that our Federal Government should leave no stone unturned to establish bases in every accessible part of the world to combat Communism—to keep our dearly-bought international powder dry—I urge that we remain as calm as we can, that we retain complete faith in the final outcome.

WE WON'T BE MUZZLED

More Letters to the Editor are being received these days by this publication than ever before in its 37 years. Cancellations of subscriptions are unusually numerous. Our criticism of the highhanded methods flaunted by Senator McCarthy has incited most of them, has aroused intense indignation, has brought down on our heads condemnation as being pro-Communistic.

Other readers have berated us for discussing political subjects. One example: "Your masthead is: 'Business and Finance,' why not stick to that? As for politics, we can get what you are charging us for free, gratis, for nothing. So why compete?"

Let me say in the plainest possible language that we have no intention whatsoever of being muzzled regarding politics or any other subject affecting business. In recent decades legislation has played an important part in our national economy. Politics and business have become inextricably, importantly intertwined. Therefore, although we are keenly aware that whenever we express our sentiments on politics, we inevitably incur partisan disapproval, we nevertheless choose, at whatever cost, to exercise our right as free citizens, exercise our right to record our sincere convictions.

We are not a catch-penny publication. We prefer principle to pelf. And will steadfastly continue to do so while this publication is managed by the writer.

Incidentally, notwithstanding the eruption of cancellations by readers who see no defects in Senator McCarthy's overweening, dictatorial attitude, our circulation at this moment is at the highest point ever. We interpret this as signifying that sound-thinking Americans are in the vast majority.

RECESSION HAS BEEN A MEDICINE

Medicine rarely is palatable. But often it makes for better health. The recent recession—can we justly refer to it in the past tense?—has had several salutary consequences. Inflation has been largely halted. Strikes and threats of strikes have subsided. Consumers are spending more discriminately, revealing that the virtue of thrift is being more keenly recognized. Presumably our Federal legislators are giving more serious thought to analyzing proposed expenditures. The people as a whole are now more sober-minded, thoughtful, more conscious of down-to-the-ground realities.

Happily, however, the majority of corporation and other business leaders have not become white-livered because of the mild—and let us hope very temporary—economic wavering. Few, if any, authorizations of industrial capital expenditures have been cancelled. The prospect still is that construction, expansion will continue vigorously this year, with final totals rivaling the best ever.

Once again I want to emphasize: "Don't sell America short!"

HOW MUCH CAN A MAN DO?

How much work can one do, how much can a worker produce? As I grow older, I find that my daily productivity is governed largely by my mental state, that if I feel very vigorous mentally my capacity, my capabilities increase, my performance improves.

Just as locomotives and other machines fall far short of their theoretical power, most human beings fall short of their maximum effectiveness. Often I have noticed how piece workers out-produce employees paid by the hour and day.

These observations are inspired by facts received from The Lincoln Electric Company, of Cleveland, Ohio, relating to a recent editorial in this publication. Aren't the following figures astounding?

It has been called to our attention that in an editorial, "Workers, Too, Must Help," in the April 1 issue of your magazine (p. 13), the record of The Lincoln Electric Company workers was cited as an example of productivity that can be achieved.

Your story is better than you think. You cited the average yearly pay as $5,800. Last year this figure was $8,000. The productivity in terms of dollar sales per man per year which made this average wage possible was over $36,000.

Incidentally, the company has never missed a dividend since

it started paying them in 1918, and the dividend has been consistently 6% for many years. We have never lost a single hour of production through a so-called misunderstanding between management and workers.

Twenty years ago the consumer paid $770 for a 300 ampere Lincoln welding machine. Today he can buy a 300 ampere machine which is far superior in many ways for only $510, a decrease of 34%. Wholesale prices have rocketed during this period by something more than 100%, and the value of the dollar has decreased almost 50%. It has been conservatively estimated that Lincoln customers over the last 20 years have saved more than $425,000,000. Obviously, everybody benefits from our philosophy of incentive management.

If every group of workers in America matched Lincoln Electric's employees, what would our national output reach? Despite the shortsighted attitude of labor union leaders, American industry should bestir itself to initiate and greatly expand incentive remuneration. Any class of artisans, be they bricklayers, masons, slaters, whose unions compel them to restrict their efforts to an arbitrary minimum, cannot possibly feel as happy as men who are conscious that they are doing their best. Enforced semi-loafing is spiritually poisonous.

This whole subject embodies limitless potentialities. Featherbedding smothers men's souls.

*

To make headway, make friends

*

EVERY OFFICER TO BE A STOCKHOLDER

Readers of this publication, nearly all of whom own investments, have commented freely on what appeared here on the subject of the stock holdings of companies by their officers and directors. Most clearly is it revealed that stockholders dislike intensely to find from proxy statements that top-notch executives, drawing five-figure or six-figure annual salaries, have not purchased more than a few shares. The general interpretation is that this reveals scant confidence in the enterprise by those running it and, therefore, presumably most intimately acquainted with its condition.

Because I have voiced sympathy with this stand, I have received numerous personal letters from business leaders. They emphasize that the value of a man as a director is not at all dependent upon the size of his stock holdings. That perhaps can be conceded. But I, as well as other investors, draw a distinction between outside directors and directors who are well-paid officers. I cordially agree with stockholders who expect such officials to show their faith by acquiring not nominal but considerable, even substantial, stock ownings.

Apropos of all this, here is an intriguing precedent, which could beneficially be adopted by other companies. At the last annual meeting of Merritt-Chapman & Scott Corp., L. E. Wolfson, president and chairman of the board of directors, announced that under a new policy "every officer of the corporation expects to be a stockholder in an amount at least equivalent to his annual salary." He added that when this program was outlined, company officers "accepted it enthusiastically, since they regard it as their duty and responsibility to own as much stock as their circumstances permit." Mr. Wolfson emphasized that the officers wanted no discount on this stock and are buying the shares at the prevailing market price.

Will I be adjudged an irrational visionary if I predict that this will prove a landmark in America's corporate annals, that this practice will be very widely adopted in coming years, that the time will come when very few $50,000-$100,000 executives will dare boycott their own stock?

REFLECTIONS AT A LAUNCHING

A few days ago I attended the launching of the second-largest oil tanker ever built, a tanker that will carry more oil in less time than any other tanker on the seven seas. It was christened by the wife of the Chairman of the Board of the Cities Service Company and bears his name, W. Alton Jones. The occasion brought to mind three reflections.

First, the almost incalculable contributions made to the welfare of this country by the man for whom the great ship is named. From the time he became leader of the Cities Service Company two decades ago, he piloted a then-beset outfit into its present status as one of the largest and most outstanding successful companies in the nation. In the interim he has taken time out to perform many public services, including the building of the vitally-needed "big inch" pipe line during the war. Long after this spanking new tanker is rusted and gone, the impact of his contributions to our wellbeing will remain.

My second reflection was on the rapid drying-up of American shipbuilding. The Newport News shipyard, one of the world's largest, is fast running out of orders—and not many more loom on the horizon. Are we wise, despite the fact ships can be built cheaper elsewhere, to have our shipbuilding know-how completely melt away?

The third reflection was prompted by Mr. Jones' remarks at the launching luncheon. He contrasted the new tanker with the "first known oil tanker." It started down the Euphrates about 500 B.C. It was a raft with some stretched-hide containers of asphalt and bitumen. When the owner, an Armenian merchant, reached Babylon, he sold his petroleum products at a profit. In our everyday busyness it takes such dramatic reminders to make us realize the extent of our progress in raising the standard of living for all. From the day of that Armenian's enterprise until now no greater spark for doing things better has been discovered than the free enterprise system under which endeavor can earn reward. This simple fact, so sharply illustrated at the launching of the W. Alton Jones, should not be lost sight of when the "ism" boys sing their siren songs.—MALCOLM FORBES.

CULTIVATE CHEERFULNESS

When I dictated that headline to my secretary of thirty years' service, she ejaculated: "Oh! You have already written on this subject."

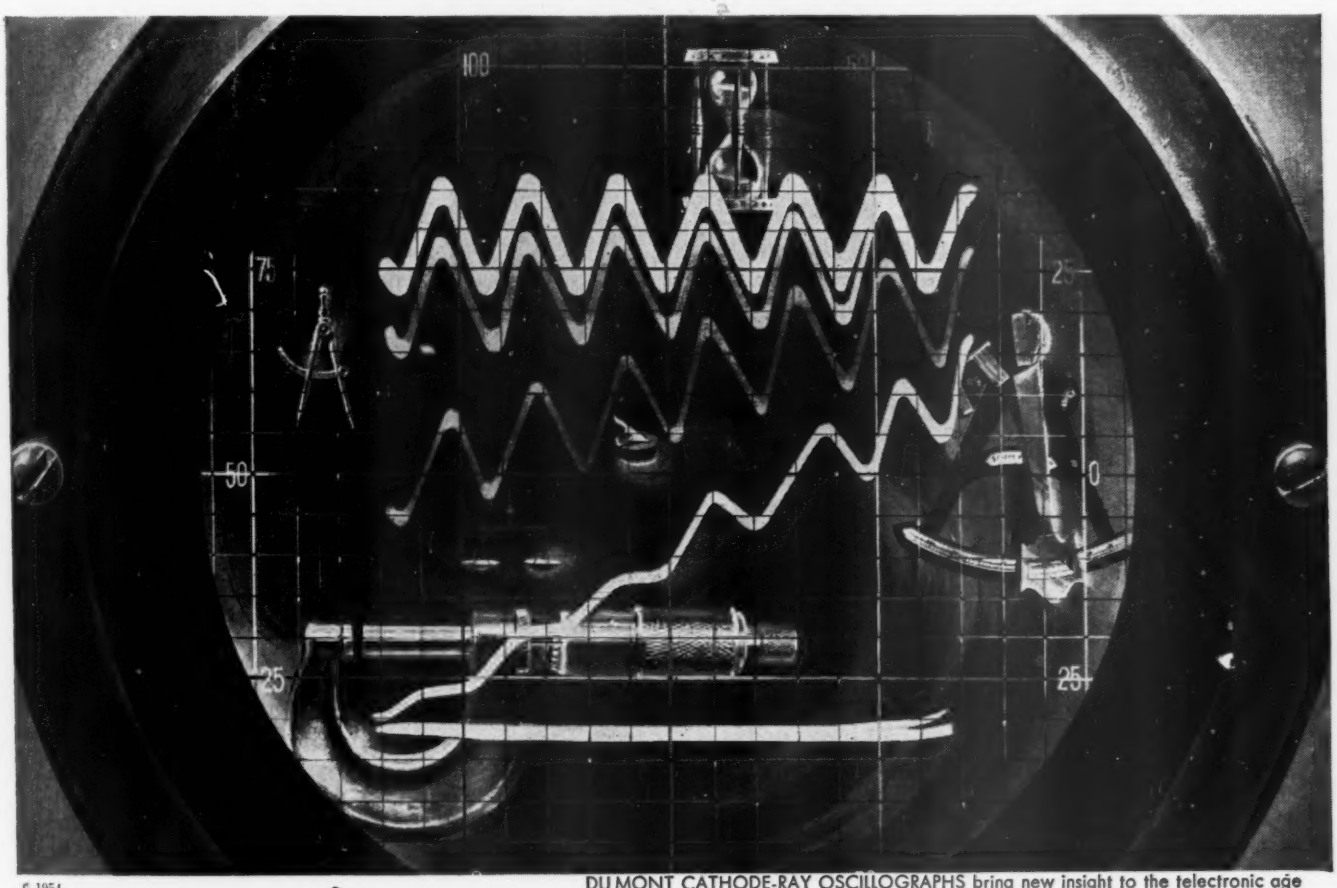
I have, of that I am very well aware. But the importance of developing a cheerful attitude impresses me more and more with every passing decade. Life, in a sense, is what you mentally make it. I pity anyone who is chronically a grouch, pessimistic, discontented. A cheerful frame of mind is like church-going, largely a matter of habit: if you develop a morose attitude the chances are that you will persist in it, just as if you get into the habit of going to church you continue to go, whereas if you stop going, you continue not to go.

If you are so constituted that you cannot be cheerful, seek strenuously to be as cheerful as you can. "A merry heart goes all the way. . . ."

The YARDSTICK
that will measure new futures for man

Truly *vision is the Du Mont dimension!* The economical cathode-ray oscillograph, pioneered by Du Mont in 1932, has brought new vision to thousands of projects for industry, science and national defense. Called "the X-ray of the engineering technician", it pictures such *invisible* things as atomic fission . . . the internal operation of engines and electronic circuits . . . the inner strength of metals under stress. Its oscillations are accurate to hundred-millionths of seconds and reveal smallest variations of materials, time, or motion!

Today this Du Mont cathode-ray oscillograph is essential to accurate automatic mass-production control. It is one of the most highly valued tools of nuclear research, medicine, acoustics, metallurgy, chemistry, automotive and aircraft engineering.



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"MR. CHAIRMAN"

Air Reduction's Charles S. Munson

In Bound Brook (N.J.) next week, workmen will stretch taut across Main Street a banner reading "A Better America Through Chemical Progress." In Norfolk (Va.) the same message will blazon forth at commuters from multi-colored car cards. Thus multiplied in the more than 5,000 towns in which member companies have plants, banners, cards and announcers all will be heralding the Manufacturing Chemists Association's first national Chemical Progress Week (May 17-22).

Progressive Pilot. Board Chairman of $135.1 million (assets) Air Reduction Co. and chairman of the Association, 65-year-old Charles Sherwood Munson will be at the nerve center of this activity. For Munson, Chemical Progress Week really began eight years ago when he was elected MCA President and began to transform the organization from an industry information service into its new role as industry spokesman.

For this effort Yale graduate Munson (class of '12) last year was awarded the Society of Chemical Industry's medal for "conspicuous services to applied chemistry." Munson, however, insists that other MCA officials—Merck & Co. Chairman George Merck and du Pont VP William Ward—deserve all the credit. This kind of modesty is characteristic of Munson. Says one old associate: "Carl is a real heavyweight in everything he does. But he will never talk about himself."

But Munson likes nothing better than to talk about MCA, whose 152 member companies represent about 90% of the industry's productive capacity and last year rang up sales of close to $20 billion. A non-technical man himself, Munson, who one day would like to have a laboratory of his own to "putter around in," feels that the biggest problem facing the chemical industry today is not continued growth, but air and water pollution. While continuing to wrestle with such problems as plant safety conditions and tank car specifications, under Munson's leadership MCA has intensified its pollution-prevention research. Through its members, says Munson, MCA has pooled the industry's best brains on the subject, developed the kind of concentrated attack that "no one company alone, no matter how big," could have mustered.

From the Bottom Up. Air and water pollution, however, was the last thing in Munson's mind when he got his first job "down in New York's cotton goods district" with Amoskeag Corp. Born and raised in Connecticut, Munson landed the job through fellow New Englander Frederic Dumaine. Shortly before Munson reported for work, the Amoskeag office manager died. "When I got there," recalls Munson, "nobody knew what I was supposed to do. But there was a credit desk empty and they gave it to me." If anybody needed credit, it was Munson: "I was a married man and they paid me ten dollars a week. I really learned the value of a dollar."

This kind of experience came in handy several years (and several raises) later when Munson moved on to Cuban Air Products Co., "a very little operation" in which Air Reduction then held a 25% interest. Cuban Air "got into trouble," says Munson, "and they sent me down there to straighten it out." Diagnosing the trouble as discontent among many American employees who hated it in Cuba and "couldn't wait to get home," Munson handed out a sheaf of pink slips. As replacements he hired Cubans, Germans, British—"anybody I thought wanted a job and would do a job well."

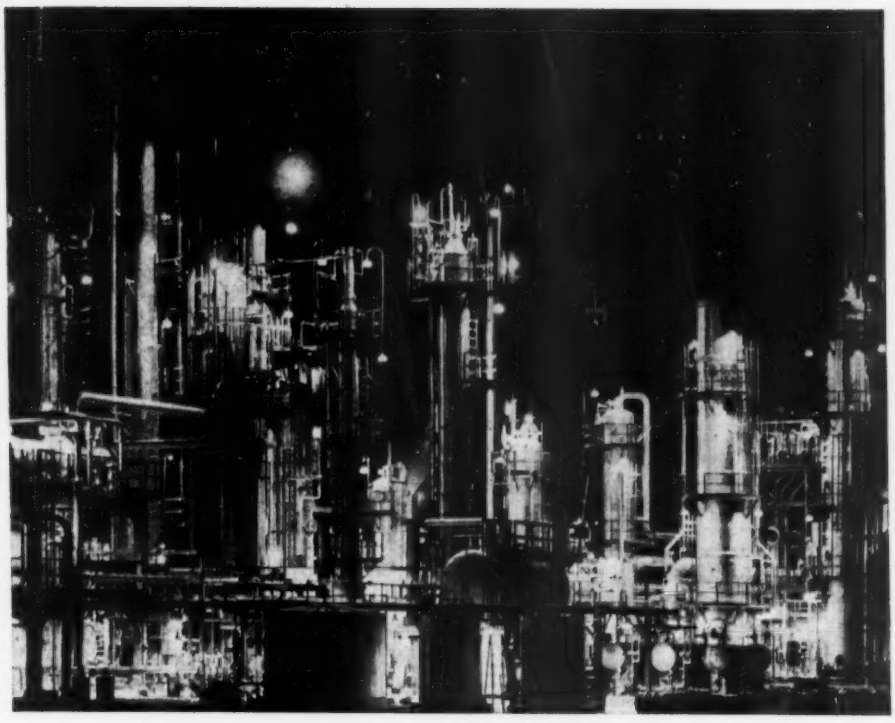
Up the Ladder. By demonstrating his own willingness to do a job thoroughly Munson caught the eye of Air Reduction President Charles Adams, got quick advancement. After seasoning as president of still another Airco subsidiary—National Carbide Co.—Munson took over the parent company's financial vice-presidency. In this job, according to associates, "more than any one man" Munson spotted the rich potential of U.S. southwestern markets. It was Munson who concluded the deal in which Air Reduction acquired the Magnolia Gas Products Co., including plants at Fort Worth, El Paso, San Antonio, Beaumont and Corpus Christi. They formed the nucleus for what was to become Air Reduction's Magnolia Products Division, now headquartered at Houston (Tex.).

Working up through the ranks, Munson so proved his mettle that President Adams, when he moved up to chairman (though remaining as chief executive officer), named Munson as his successor. At Airco today, the situation is somewhat different. Munson, who likes to delegate responsibility and "give the young fellows a chance," is quick to admit that President John Hill "really runs the company. I am just the liaison between management and the board."

Work to Do. The ever-zestful Munson, who golfs in the low '80s, complains that he was "born 20 years too soon. There are so many things to do and so few hours to do them in." Retirement is far from his mind. In addition to all his Air Reduction responsibilities, Munson keeps himself busy with a host of "outside" directorships. Munson, for instance, is also a director of Canada Dry Products Co. which puts the fizz in its carbonated beverages with the help of Air Reduction carbon dioxide.

As president, Munson boosted Airco's sales from $30.8 million in 1937, his first year in the job, to $94.9 million in 1948, when he moved over to make room for Hill. Together they have since raised sales to $134.1 million. They also have transformed Air Reduction from a specialized producer of industrial gases (e.g., oxygen, acetylene) into a much more broadly diversified producer of equipment with chemical products as well. Example: Airco's new $17 million calcium carbide plant at Calvert (Ky.), which pipes acetylene to an adjacent processing plant to be ultimately used in making plastics.

Both as Airco and MCA chairman, Munson is devoted to the vision of "A Better America Through Chemical Progress." Of the industry's and of Airco's future alike, he is supremely confident. "We have been growing and we are going to keep right on growing."



CHEMICAL PROGRESS

For growth & spread, nothing beats the U.S. chemical industry, which has quadrupled in size since 1940, will repeat the feat by 1975

IN many ways, the nation's sixth-largest industry — chemicals — is the model of U.S. industry itself. Not in sales, which have soared from only $4 billion in 1939 to more than $20 billion today. Nor in the kind of men who run it: for the most part chemists and research men wedded to the laboratory. But no other industry today is woven so deeply into the nation's economic life.

As one industry leader recently pointed out, chemical products today touch every phase of human existence. In one form or another, the average man uses chemicals practically every waking hour of his life. The chemical industry is the only one which markets its products to every one of the 72 recognized major U.S. industry groups. In the process of serving them it has actually become ten or fifteen separate industries all rolled into one. For example, merely supplying chemicals to the U.S.'s automobile industry is today itself a $600 million business.

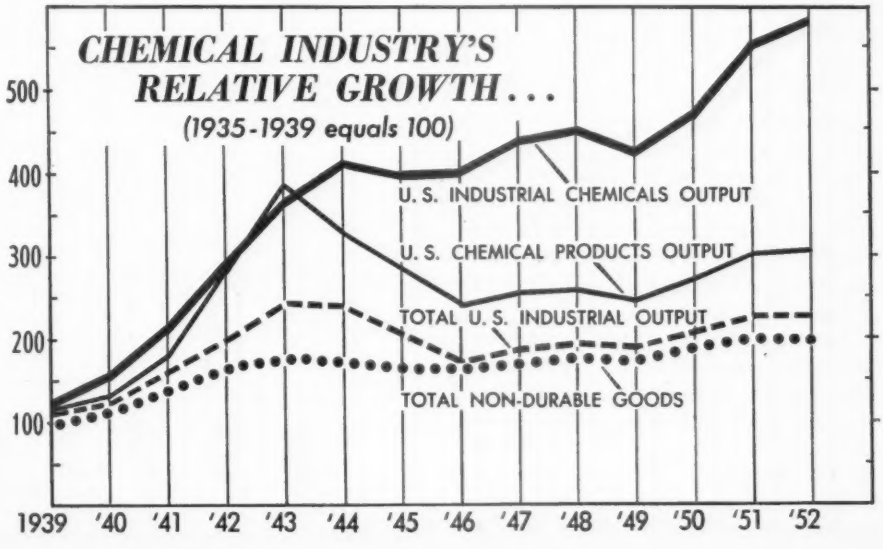
Growth Giant. No other U.S. industry of comparable size has ever grown so fast. One company alone, du Pont, had sales last year of $1.8 billion, or two and one-half times the whole industry's sales in 1937. Union Carbide & Carbon Company's sales today are 1.5 times as large as the entire chemical industry's only 17 years ago. In this rapid growth, the chemical industry has benefited from, and helped to create, a 400% expansion in the petroleum industry, a similar growth of the rubber industry, a 300% rise in textile and apparel manufacturing and a four-fold growth in the paper products industry since 1939.

In this amazing expansion, chemicals have changed the pattern of life of every American and the economic life of the nation as a whole. For example, synthetic detergents, virtually unknown before the war, last year outsold soap (by weight) for the first time. And the chemical industry, whose first principle is change, has itself been altered radically. Today roughly 40% of the sales of the Big Seven chemical companies (*see page* 22) are accounted for by products that were not made 15 years ago. While U.S. industry as a whole has averaged 3% growth a year since 1925, the chemical industry has expanded an average 10% a year.

Broad Horizons. Vast as has been the chemical industry's past growth, the future seems still more promising. So rapid is the introduction of new products and processes that the industry's plants begin to become obsolete even before the last pipe is put into place. Moreover, there seems to be no end to U.S. industry's capacity to absorb new chemical products. For example, the President's Materials Policy Commission has foreseen an 800% increase in the nation's needs for plastic and synthetic resin production by 1975, and by then synthetic textile fibers are expected to account for 40% of total U.S. textile consumption.

But because the industry experienced some sag in sales toward the end of last year, and much of its emphasis has turned from production to selling, some observers have come to believe that it is now a maturing industry, with most of its growth behind it. If so, last year's record was a pleasant sort of pain. Although sales dropped off in the last quarter for many chemical companies, it was the best year in both sales and earnings in the industry's history.

Moreover, although demand for some chemicals remained somewhat easier in the first quarter of this year, the industry looks forward to the second



REPORT FROM THE LABS

Recent and projected research outlays for 17 Chemicals Products companies

Company	1952 Research Expenditures		1953 Research Expenditures		1954 Research Estimates
	Millions	As % of Sales	Millions	As % of Sales	
du Pont	$52.0	3.2%	$57.0	3.2%	Up 10%-15%
Union Carbide	30.0	3.1	34.0	3.2	Increase
Dow	12.2	3.0	12.9	3.0	No change
Allied	13.0	2.7	14.5	2.7	$16 million
U. S. Rubber	25.5*	3.0	25.2*	3.0	No change
American Cyanamid	18.8	5.1	20.3	5.3	Not reported
Monsanto	8.85	3.3	10.3	3.0	Some increase
Mathieson		(*Not available*)			No change
Hercules Powder	6.39	3.5	7.91	4.2	No change
Inter'l Min. & Chem.	2.0	2.4	2.0	2.3	No change
Columbian Carbon	0.751	1.6	0.8	1.5	$850,000
Penn Salt	1.09	1.9	1.38	2.3	$1,516,000
Spencer	0.575	2.0	0.974	3.0	$985,000
Hooker	0.75*	2.1	0.85	2.2	$1 million
Interchemical	1.76*	2.0	1.82*	2.0	No change
Victor	0.872	2.4	1.0	2.3	No change
Dewey & Almy	1.25*	4.2	1.44	4.2	No change
Average ratios for 16 Companies		2.8%		3.0%	Definitely more: 7
Consensus of 17 companies for 1954					No change: 10
					Definitely less: 0

* Approximate.

best year in its history. As one sales manager put it: "A year like this back in the late 1940s would have earned me a nice bonus." Actually, in the next seven years, according to industry estimates, capacity in some lines is likely to outrun demand. But by 1975, the U.S.'s growing need for chemicals is expected to expand the industry to four or five times its present size.

Money Matters. To meet these anticipated needs, the U.S. chemical industry is planning to spend huge sums. In the first quarter of this year, the industry scheduled expenditures at an all-time high. But for the year as a whole, expenditures for new plant should fall 16% below the record $1.7 billion spent last year. The industry, however, is planning expenditures for expansion over future years at a level which will probably match its outlays in the pre-Korean years.

Such figures are all the more impressive in light of the chemical industry's huge capital expenditures since 1945. In its first round of postwar expansion, from 1946 to 1951, the industry plowed a thumping $5.5 billion into new plant, and is currently two-thirds through an additional $6 billion expansion program that will be completed in 1955.

To finance such rapid expansion, chemical companies are increasingly resorting to debt financing. This is a remarkable change. For generations the chemical companies were noted for the small amount of funded debt and senior securities ahead of their equity capital. At the end of World War II, half of the leading U.S. chemical companies had no debt and no preferred stock outstanding.

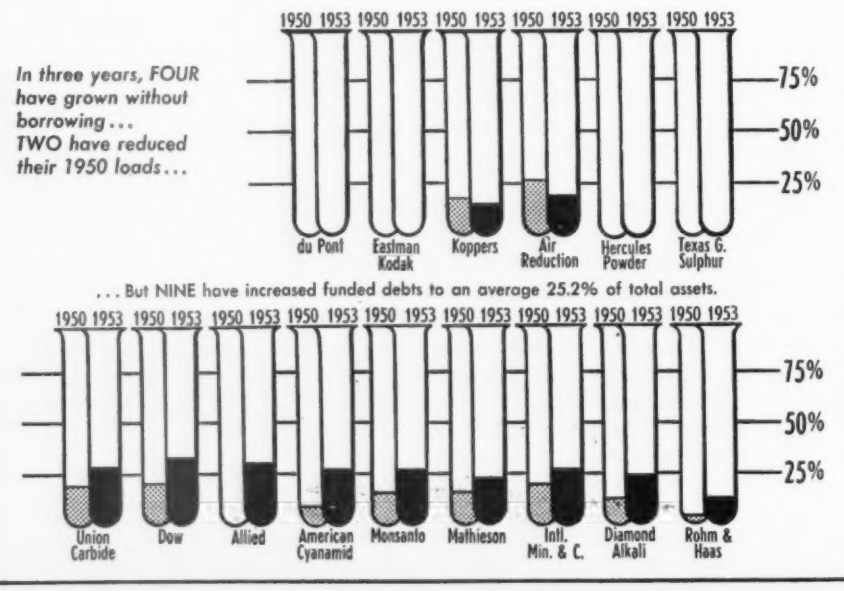
But in their rapid expansion they have learned the advantages of outside financing. Thus Allied Chemical & Dye, which in 1951 had no debt or preferred stock outstanding, borrowed $50 million in 1952 and last year floated a $200 million bond issue, the largest corporate debt offering ever made to the public. In the same two years, Monsanto has doubled its debt and Mathieson nearly done so. Union Carbide & Carbon has floated a $300 million debt issue to institutional investors. Last year, 93% of the new money sought by chemical companies was secured through debt financing.

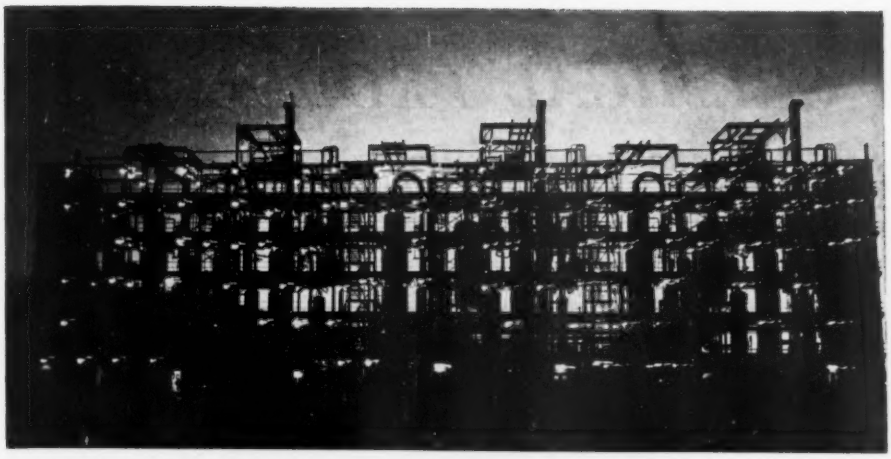
There are still, to be sure, some big chemical companies which have gone through the post-war expansion period and remained debt-free. Among them: du Pont, Hercules Powder, Eastman Kodak, Pennsylvania Salt and Victor Chemical.

First Resource. While the chemical industry has been learning its way around the money marts, its chief resource is still the research chemist with his test tubes and restless microscope. At least as much as any other U.S. industry, the chemical industry banks on research to keep it prosperous and growing. But as the industry well knows, research is a risky, costly gamble. Observes du Pont President Crawford H. Greenewalt: "Not more than one out of five research dollars ever rings the cash register."

This one-in-five payoff, however, has been enough to keep the chemical industry bubbling over with new products like a laboratory flask. The golden flow of new products and processes has revolutionized the leather, cement, rayon, metals, oils-and-fats, paper, petroleum, paints and drugs industries, just to name a few. According to the President's Materials Policy Commission: "The chemical industry has the unique facility for modifying abundant raw materials not only into products suitable as substitutes for other materials but also into new materials having new properties and superior to anything previously known."

15 TOP TEST-TUBERS — AND THE DEBTS THEY KEEP





DU PONT'S WAYNESBORO (TEX.) ACETATE PLANT:
from laboratory test tubes, a golden stream

To keep this glittering array of new products bubbling out of their laboratories, chemical companies today employ roughly 30,000 research professionals, or about one-twentieth of their entire payrolls of 700,000 men. Last year the industry probably spent in excess of half a billion dollars on research. *(For news of 17 leading chemical companies' research programs, see box.)*

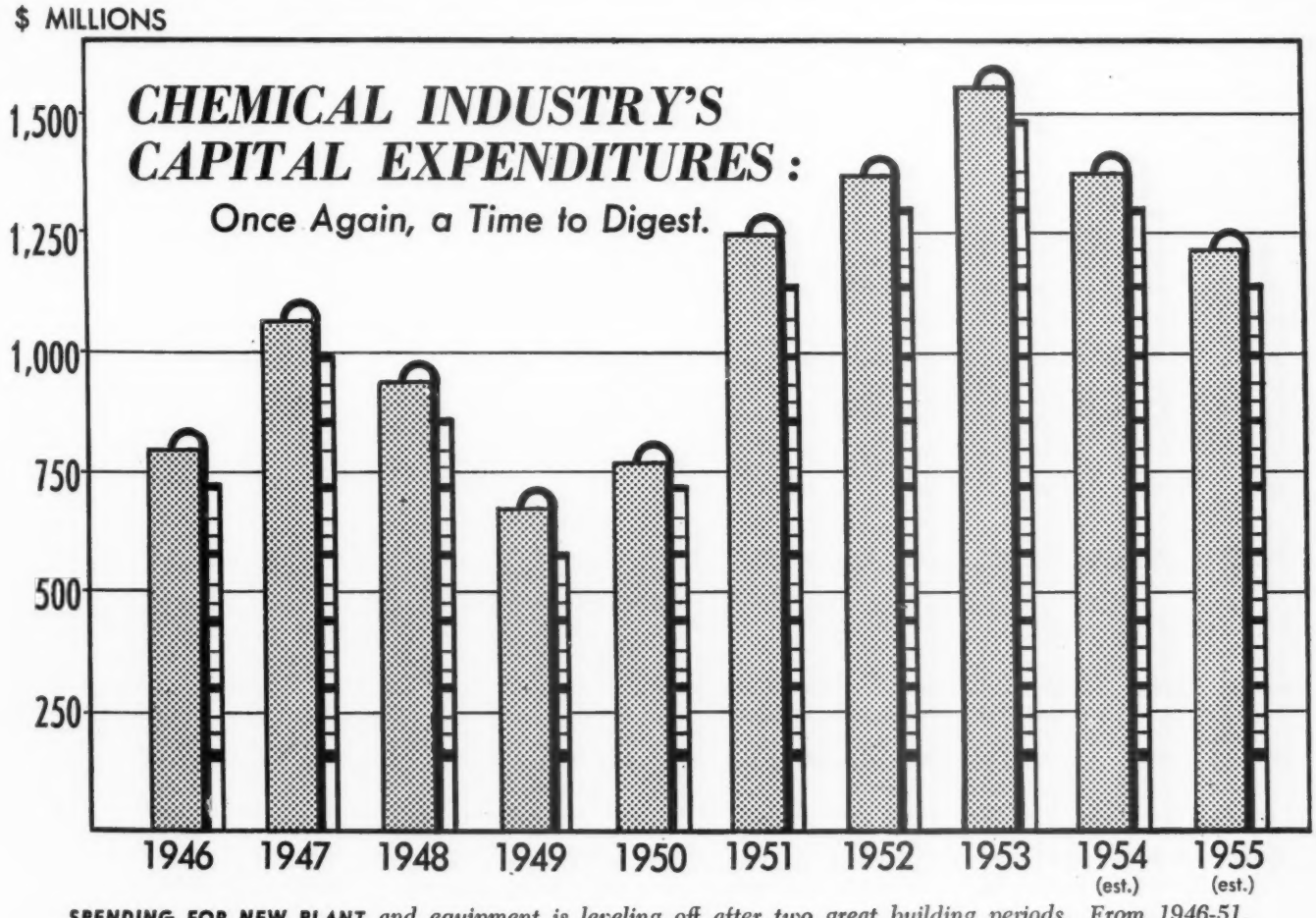
Complex Competition. One result of industry research is to make the chemical industry itself among the most competitive in U.S. industry. Not only do chemical companies compete against each other, but meat packers, oil refiners, electrical equipment and machinery companies have all swelled their own research staffs to find ways to get into the chemical business. Armour & Co., for example, now counts its drug and chemical division as the main source of its profits. Lion Oil Co., already heavily in chemicals, is spending another $31 million on a new plant that will increase its nitrogen-producing capacity by more than 50%.

What Now? But in the past year chemical companies have been learning about another essential besides research skill and production know-how. Until last year, the main problem was production; now it is sales, in some lines at least.

Yet there is little likelihood that the U.S. chemical industry, which has survived "adjustments" before, will ever want for customers. New products already in production, such as improved plastics, petrochemicals, agricultural and coal chemicals, have hardly scratched their potential markets.

For the future, Dow Chemical President Leland Doan plots a growing demand which may expand the industry as much as 500% by 1975. Plastics based on petroleum and natural gas, he believes, will play an increasingly big part in total chemical production. He also sees far wider use of new synthetic textile fibers, greater demand for agricultural chemicals, and revolutionary developments in metallurgical chemistry. Says he:

"The outstanding achievements of chemical research and production suggests that, over the long pull, chemistry will continue to be a major force for progress in raising our standard of living—not alone in those 'things' that make up our material world, but in those cultural and spiritual satisfactions that give meaning and zest to living."



SPENDING FOR NEW PLANT *and equipment is leveling off after two great building periods. From 1946-51, the industry's outlay totaled $5.5 billion. A second $6 billion program will be completed next year.*

FORBES LINEUP

THE MAJOR CHEMICAL PRODUCERS

Who's Who—And How They Do

THE DIVERSIFIED BIG SEVEN

1953 Total Assets (Millions)	1953 Pretax Profit Margin	1953 Net Return on Book Value	1953 Per Cent Dividend Payout		5-Year Average, 1949-'53 Book Value Growth %	Rank	Pretax Profit Margin %	Rank	Net Return on Book Value %	Rank	Dividend Payout %	Rank	Composite Ranking
$2,567.0	36.3%	16.5%	76.9	du Pont	56.1	4	37.0	1	20.6	1	77.4	1	1
1,191.0	22.2	15.7	70.4	Union Carbide	34.7	5	26.0	2	18.0	2	66.4	2	2
768.9	20.1	12.0	57.0	Dow	67.6	3	25.0	3	15.7	3	39.5	7	4
702.6	15.1	13.1	58.8	Allied Chem. & Dye	19.0	7	17.5	5	12.7	7	62.9	3	6
443.2	13.8	11.3	63.5	Amer. Cyanamid	76.4	2	16.4	7	15.0	4	53.5	4	5
362.0	14.5	12.3	51.0	Monsanto	83.3	1	19.0	4	14.6	5	52.7	5	3
339.1	14.4	13.7	60.6	Mathieson	28.7	6	17.2	6	14.5	6	52.7	5	7
	20.3	13.5	62.9	GROUP AVERAGE	56.2		23.5		16.1		58.7		

STAPLE CHEMICALS

1953 Total Assets (Millions)	1953 Pretax Profit Margin	1953 Net Return on Book Value	1953 Per Cent Dividend Payout		5-Year Average, 1949-'53 Book Value Growth %	Rank	Pretax Profit Margin %	Rank	Net Return on Book Value %	Rank	Dividend Payout %	Rank	Composite Ranking
$222.6	10.3%	11.0%	54.6	Food Mach. & Chem.	28.4	7	12.0	9	10.9	6	48.7	9	8 (tie)
135.1	10.4	7.9	68.0	Air Reduction	26.8	8	13.4	7	10.3	9	49.9	8	10
103.7	13.6	9.9	62.7	Diamond Alkali	20.1	10	15.9	4	10.0	10	57.0	6	7
77.5	13.3	10.3	49.7	Stauffer	63.3	2	17.0	3	14.8	3	32.4	12	3
74.4	14.1	15.9	45.6	Natl. Cylinder Gas	39.0	6	14.3	6	14.3	5	48.0	10	4 (tie)
69.8	9.7	7.0	99.0	Commercial Solvents	13.6	11	13.3	8	10.7	7	80.9	1	4 (tie)
65.0	10.7	4.2	68.0	Penn. Salt	25.8	9	14.7	5	8.8	11	59.2	4	6
62.2	18.9	12.0	69.6	Hooker	40.8	5	23.1	1	14.7	4	58.6	5	2
58.4	8.7	5.3	77.3	Liquid Carbonic	10.9	12	9.1	10	6.1	12	61.2	3	11
42.2	17.3	15.3	65.5	Victor	41.8	3	18.6	2	17.5	1	62.1	2	1
26.1	4.7	7.8	55.5	Harshaw	69.7	1	5.4	11	10.5	8	46.3	11	8 (tie)
11.6	N.A.	15.6	55.8	Niagara Alkali	41.6	4	N.A.	–	17.2	2	54.1	7	–
	11.6	11.9	63.9	GROUP AVERAGE	35.2		14.3		12.2		54.9		

SPECIALIZED PRODUCERS

1953 Total Assets (Millions)	1953 Pretax Profit Margin	1953 Net Return on Book Value	1953 Per Cent Dividend Payout		5-Year Average, 1949-'53 Book Value Growth %	Rank	Pretax Profit Margin %	Rank	Net Return on Book Value %	Rank	Dividend Payout %	Rank	Composite Ranking
$84.7	16.1%	12.5%	23.7	Rohm & Haas	41.9	3	16.9	2	14.8	2	20.7	9	2
48.9	8.2	10.0	55.4	Interchemical	24.9	7	5.1	9	11.5	5	49.7	6	7
40.6	9.5	10.3	49.6	Atlas Powder	24.5	9	9.4	8	9.7	8	55.3	5	8
38.3	10.6	4.0	73.5	Heyden	63.9	2	13.5	3	6.7	9	69.1	1	1
26.4	10.7	12.4	44.6	Dewey & Almy	84.3	1	10.7	7	14.6	3	46.2	8	4
21.2	N.A.	19.0	67.5	Durez Plastics	39.3	4	N.A.	–	20.9	1	66.6	2	–
21.1	30.4	15.0	59.7	Blockson	N.A.	–	30.2	1	N.A.	–	17.3	10	–
18.7	8.1	5.5	84.2	Newport Ind.	24.7	8	12.3	6	9.9	7	59.9	4	6
12.0	13.8	10.5	71.8	Nopco	30.2	5	12.6	5	11.8	4	64.0	3	3
7.5	1.3	2.6	35.7	Catalin Corp.	29.2	6	12.8	4	10.2	6	48.7	7	5
	12.6	12.6	48.4	GROUP AVERAGE	40.3		13.7		12.2		43.1		

N.A. Figures not available.

AGRICULTURAL CHEMICALS

1953 Total Assets (Millions)	1953 Pretax Profit Margin	1953 Net Return on Book Value	1953 Per Cent Dividend Payout		5-Year Average, 1949-'53 Book Value Growth %	Rank	Pretax Profit Margin %	Rank	Net Return on Book Value %	Rank	Dividend Payout %	Rank	Composite Ranking
$116.1	11.1%	9.9%	55.7	Int. Min. & Chem.	36.7	2	12.7	5	12.2	2	41.9	4	3 (tie)
64.3	34.1	24.6	54.9	Spencer	65.4	1	36.3	1	30.3	1	37.1	6	1
63.9	9.5	25.9	none	Va.-Carolina	N.A.	–	11.1	6	N.A.	–	none	7	–
59.5	10.1	7.7	45.9	Davison	8.9	6	10.5	7	9.4	5	40.0	5	6
47.5	18.4	12.1	50.3	Tennessee Corp.	29.9	3	16.4	2	10.2	4	61.9	2	2
45.7	13.6	10.8	69.8	Am. Agric. Chem.	12.1	5	14.3	4	11.3	3	68.4	1	3 (tie)
34.7	12.9	9.1	49.9	Am. Potash	18.1	4	15.8	3	8.7	6	53.6	3	5
	15.7	14.3	46.7	GROUP AVERAGE	28.5		15.3		13.7		43.3		

N.A. Figures not available.

MINERAL CHEMICALS

1953 Total Assets (Millions)	1953 Pretax Profit Margin	1953 Net Return on Book Value	1953 Per Cent Dividend Payout		5-Year Average, 1949-'53 Book Value Growth %	Rank	Pretax Profit Margin %	Rank	Net Return on Book Value %	Rank	Dividend Payout %	Rank	Composite Ranking
$174.9	22.4%	15.7%	46.7	Minn. Mining & Mfg.	68.8	1	23.3	3	18.9	2	43.2	3	2
66.9	12.9	11.6	47.4	Carborundum	66.8	2	14.3	4	12.5	4	31.2	4	4
22.2	25.3	12.1	53.8	International Salt	39.3	4	25.9	2	13.9	3	49.7	2	3
16.0	21.8	18.1	76.6	U. S. Potash	47.0	3	29.5	1	25.5	1	64.5	1	1
	19.1	13.3	54.9	GROUP AVERAGE	48.0		21.8		15.9		48.4		

SULFUR PRODUCERS

1953 Total Assets (Millions)	1953 Pretax Profit Margin	1953 Net Return on Book Value	1953 Per Cent Dividend Payout		5-Year Average, 1949-'53 Book Value Growth %	Rank	Pretax Profit Margin %	Rank	Net Return on Book Value %	Rank	Dividend Payout %	Rank	Composite Ranking
$86.3	51.4%	31.7%	68.0	Texas Gulf	44.0	3	54.6	1	37.7	1	74.9	1	1
59.6	22.7	18.3	56.2	Freeport	30.6	4	24.6	4	17.1	4	60.8	2	4
17.1	35.3	23.0	41.0	Duval S. & P.	76.9	2	33.5	2	20.0	3	50.0	4	3
9.3	24.6	24.8	52.0	Jefferson Lake	95.4	1	26.9	3	25.1	2	46.4	3	2
	33.5	24.5	54.3	GROUP AVERAGE	61.7		34.9		24.8		58.0		

CELLULOSE PROCESSORS

1953 Total Assets (Millions)	1953 Pretax Profit Margin	1953 Net Return on Book Value	1953 Per Cent Dividend Payout		5-Year Average, 1949-'53 Book Value Growth %	Rank	Pretax Profit Margin %	Rank	Net Return on Book Value %	Rank	Dividend Payout %	Rank	Composite Ranking
$419.3	21.0%	12.0%	61.1	Eastman Kodak	31.8	4	22.6	3	13.7	5	51.2	4	5
321.7	10.9	5.6	123.7	Celanese	—1.3	7	21.5	4	15.7	3	76.7	1	4
235.9	11.4	5.2	72.9	Amer. Viscose	27.9	5	19.9	5	10.5	6	45.1	6	6
138.2	5.7	2.9	26.9	Gen. Aniline & Dye	14.1	6	8.3	7	4.8	7	17.4	7	7
131.2	16.4	14.4	71.5	Hercules Powder	33.7	3	17.6	6	17.0	2	67.6	2	3
117.4	27.2	18.9	42.3	Rayonier	141.9	1	29.1	2	24.2	1	46.0	5	1
84.2	26.2	12.3	64.1	Industrial Rayon	33.9	2	31.0	1	15.5	4	53.5	3	2
	17.2	7.6	58.1	GROUP AVERAGE	25.9		21.0		10.8		48.4		

CHEMICALS-PRODUCING RUBBER COMPANIES

1953 Total Assets (Millions)	1953 Pretax Profit Margin	1953 Net Return on Book Value	1953 Per Cent Dividend Payout		5-Year Average, 1949-'53 Book Value Growth %	Rank	Pretax Profit Margin %	Rank	Net Return on Book Value %	Rank	Dividend Payout %	Rank	Composite Ranking
$666.3	9.7%	16.1%	29.1	Goodyear	41.2	5	9.3	3	14.0	2	34.8	3	4
567.4	9.1	13.9	29.7	Firestone	65.1	1	9.5	2	13.7	3	30.3	5	2
488.5	8.6	16.3	38.5	U. S. Rubber	54.6	4	9.1	4	15.1	1	43.5	1	1
436.9	13.0	12.3	33.7	Goodrich	58.7	3	14.1	1	13.4	4	32.3	4	3
120.2	4.7	11.8	40.7	General Tire	60.0	2	7.5	5	13.1	5	36.3	2	5
	9.6	14.0	32.8	GROUP AVERAGE	55.4		10.0		13.8		34.2		

COAL & CARBON CHEMICALS

1953 Total Assets (Millions)	1953 Pretax Profit Margin	1953 Net Return on Book Value	1953 Per Cent Dividend Payout		5-Year Average, 1949-'53 Book Value Growth %	Rank	Pretax Profit Margin %	Rank	Net Return on Book Value %	Rank	Dividend Payout %	Rank	Composite Ranking
$157.7	8.9%	8.6%	55.4	Koppers Co.	41.4	1	8.6	4	11.3	2	48.2	3	3
70.3	15.9	9.5	62.1	Columbian Carbon	23.9	2	32.7	1	11.1	4	62.5	1	1 (tie)
61.7	11.6	8.5	47.5	Pitts. Coke & Chem.	19.7	4	13.2	3	11.2	3	37.0	4	4
38.9	17.5	11.6	51.2	United Carbon	23.2	3	18.1	2	11.4	1	53.2	2	1 (tie)
	13.5	9.6	54.1	GROUP AVERAGE	27.1		18.2		11.3		50.2		

PAINT MAKERS

1953 Total Assets (Millions)	1953 Pretax Profit Margin	1953 Net Return on Book Value	1953 Per Cent Dividend Payout		5-Year Average, 1949-'53 Book Value Growth %	Rank	Pretax Profit Margin %	Rank	Net Return on Book Value %	Rank	Dividend Payout %	Rank	Composite Ranking
$282.2	7.1%	17.8%	69.4	National Lead	57.3	2	12.0	2	18.5	2	64.7	1	1
133.3	N.A.	10.2	49.7	Sherwin-Williams	13.0	5	N.A.	—	10.8	4	46.3	4	—
102.8	7.0	10.5	64.5	Glidden	17.0	4	7.0	4	11.3	3	59.5	2	3
53.3	9.1	24.5	40.4	Amer. Marietta	73.8	1	12.7	1	41.8	1	21.5	5	2
27.8	6.3	9.4	32.6	Devoe & Raynolds	24.4	3	7.7	3	10.7	5	54.8	3	4
		14.5	51.3	GROUP AVERAGE	37.1		9.9		18.6		58.0		

N.A. Figures not available.

PETROCHEMICALS

Already expanded 800%, the lusty infant of the chemical industry is growing up into a giant

In 1945, chemistry's giant E. I. du Pont de Nemours & Company started work on a $22 million plant at Orange, Texas. Its purpose: to upgrade petroleum derivatives into nylon salt, which would in turn be spun into fibers for sheer hose, sleek and sturdy fabrics and other consumer products. But before original plans were completed, du Pont found that it would have to more than triple the capacity of the unit to meet the demand. Shortly after the plant opened, demand for nylon had so far outstripped production that du Pont was forced to expand the plant again. At its Sabine River Works, where du Pont makes polyethylene plastic, it ran into a similar situation. Today the plant is five times the size originally planned for when construction started in 1946.

Big & Booming. Du Pont's experience is only one example of the fabulous growth of the U.S. petrochemical* (i.e., oil-derived chemicals) industry. In 1930, petrochemical production totaled less than 1,000,000,000 pounds, or only about 1% of U.S. chemical output. By 1940, it had quadrupled, and during the following decade U.S. petrochemical output soared from 4,100,000,000 to 10,500,000,000 pounds a year. By 1952, petrochemical production had redoubled again and accounted for 21% of the U.S.'s total chemical output. Last year alone, petrochemicals production rose an estimated 25% and represented a plant investment of more than $3 billion.

But some scientists believe that the petrochemicals boom has hardly begun and that by 1962 petrochemicals will account for 50% of all U.S. chemical production. Predicts Dr. Wayne E. Kuhn, manager of The Texas Company's Technical and Research Division: "The total petrochemical plant of the United States a decade hence should represent an investment of fourfold today's investment, and likewise a fourfold increase in annual production capacity."

These figures, however, tend more toward minimizing the mushrooming growth of the petrochemical boom than adequately describing it. Since pre-war days, the nation's total industrial production has nearly doubled, while output of the chemical industry has increased twice as fast. But petrochemical production has expanded a thumping 800%, mostly in the last few years. According to Dr. L. R. Bateman of the Carbide and Carbon Chemicals Company, since War II 42 new petrochemicals have grown to tank-car stature.

Building Blocks. One of the main reasons for the petrochemicals' amazing growth is the miraculous uses to which scientists have been able to put crude oil hydrocarbons. Today they are used as foundation stones for virtually every consumer product made, including lipstick, dynamite, lingerie, cellophane, tobacco, the famous nylon stocking (once heralded as the merger of "coal, air and water"), germicides, shower curtains, detergents, insecticides, squeeze bottles, and paints and varnishes. The wheel recently completed a full turn when The Texas Company announced that a new gasoline would help keep motorists' engines from wearing out so fast because of the addition of a petrochemical compound called "Petrox."

Chemicals are obtained from petroleum through three magical processes: "cracking" petroleum or natural gas into simpler materials that can be used as building blocks; "synthesis" or conversion of these blocks into new forms to produce basic chemicals; and "polymerization," which causes the building blocks to form chains, linking simple molecules into larger molecules called polymers.

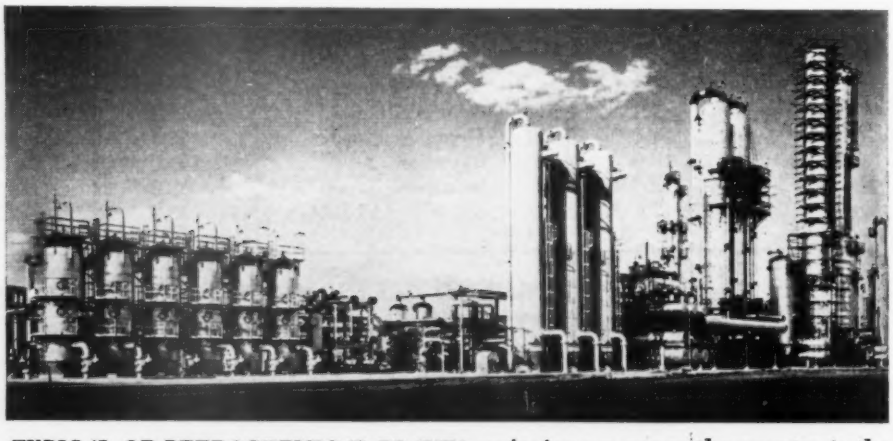
Molecular Magic. Although the process of synthesis dates back to the gold-seeking alchemists of yore, the hydrocarbon molecule was of little value as a chemical material for the first 60 years after Colonel Drake drilled his famous well in 1859. During War I, the shortage of acetone led to attempts to produce it from isopropyl alcohol, made in turn from propylene, a gas by-product of petroleum refining once considered waste and burned as fuel.

Chemists of the Standard Oil Company (New Jersey) at about the same time were looking for a synthetic supplement to motor fuel, because the sudden popularity of the car had brought fears of a gasoline shortage.* In the early 1920s, the Union Carbide and Carbon Corporation and the Esso Standard Oil Company, working independently, first undertook the production of chemicals from the hydrocarbons contained in waste refinery gases.

By the late 1930s, the new technology was growing vigorously, and when the decade ended, about 5% of all organic chemicals were derived from petroleum, *vs.* 95% from coal and agricultural raw materials. Today, chemicals derived from petroleum and natural gas account for roughly 25% of all U.S. chemical output.

World War II, with its life-or-death need for ammunition, alcohol, synthetic rubber and other materials in overwhelming quantities, rocketed the petrochemicals industry into a major resource in a shorter space of time than any other industry in history has grown. One example: the $1 billion synthetic rubber industry built from a standing start in only two years (via the polymerization of petroleum fractions or derivatives.

Boom Land. Major center for the still furiously growing petrochemicals industry is the Gulf Coast, a 600-mile crescent of land running from Baton Rouge (La.) to Brownsville (Tex.) that contains 85% of all petrochemical capacity. The Golden Horn's attractions for petrochemists are obvious: a superabundance of natural gas (over a third of U.S. supply) and a concentration of oil refineries (nearly a third of U.S.



***TYPICAL OF PETROCHEMICAL PLANTS** springing up across the country is the $50 million extraction unit of the National Petro-Chemicals Corporation*

* A term that bothers classicists, the root "petro" meaning rock, not oil.

* Footnote for the fearful: present petrochemical production takes only 1% of the nation's total petroleum output.

capacity) providing a dependable supply of raw materials at stable prices. Still other attractions are the area's deposits of key chemical ingredients like salt and sulfur, cheap water transportation, an adequate labor force and ample fresh water to slake the tremendous thirst of around-the-clock plants.

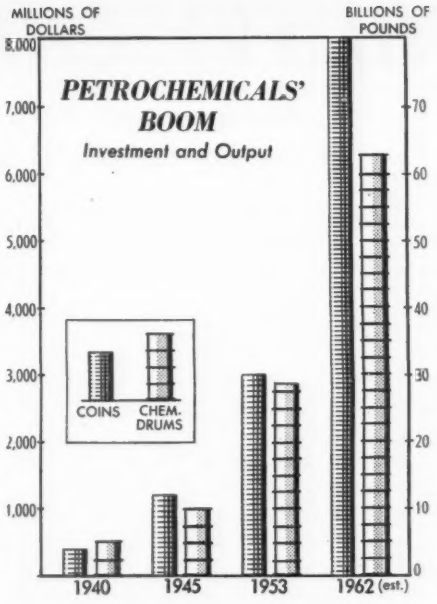
At Port Arthur, not too far away from du Pont's Orange (Tex.) nylon plant, the Gulf Oil Corporation last year put into production the world's largest ethylene gas plant, with a daily capacity of 2,500,000,000 cubic feet of ethylene gas. Through direct pipelines, Gulf supplies this basic petrochemical to the nearby plants of five major chemical producers: du Pont, the Monsanto Chemical Company, Allied Chemical and Dye Corporation, the Koppers Company and the Ethyl Corporation. Gulf has been so successful in the venture that, like many another chemical company riding the petrochemicals boom, it is planning to build another ethylene plant on the Gulf Coast.

Wide Open. Other petroleum companies have also found that "black gold" increases its glitter by transformation in the test tube into petrochemicals. The Shell Chemical Corporation, the Shell Oil Company's venture in petrochemicals, last year accounted for nearly 10% of Shell's total sales of $1,269 million. In 1952, chemicals accounted for only about 8.5%. The boom is far from over. Last December, Shell went even deeper into petrochemicals by opening an ammonia plant at Ventura (Calif.) to produce nitrogen fertilizers. Shell, which sold every pound of EPON resins it could make last year, also thereby increased its resin-producing capacity by 200%.

But top laurels among the oil companies for petrochemical production belong to the Lion Oil Company of El Dorado (Ark.), which is credited with producing, for its size, a greater volume of petrochemicals than any other oil company (22% of sales). Some other oil companies with big stakes in petrochemicals: Standard Oil (Ind.), Sun Oil, Socony-Vacuum and Union Oil.

The common aim of profits and progress has also resulted in many cooperative ventures by oil producers with other companies outside the field, such as the 50-50 partnership of The Texas Company and the American Cyanamid Company in the Jefferson Chemical Company, and the American Petrochemical Corporation, a joint effort by Cities Service Company and the Firestone Tire and Rubber Company.

Chemical Cash. But the biggest boom on the Gulf Coast has been set off by the purely chemical companies themselves, eager to plunge deeper into petrochemical production. For plant construction on the Gulf Coast alone, in 1952 Dow Chemical, Union Carbide and Carbon and Monsanto Chemical ticketed a thumping $350 million, a sum that equalled total U.S. investment in petrochemicals up to 1941. In Texas alone last year, Dow, which produces "Saran" plastics, spent more than $55 million on plant improvements and additions, much of it for petrochemical production. During the year, Dow boosted production of two basic petrochemicals, ethyl chloride and perchloroethylene, and began producing a third, trichloroethylene.

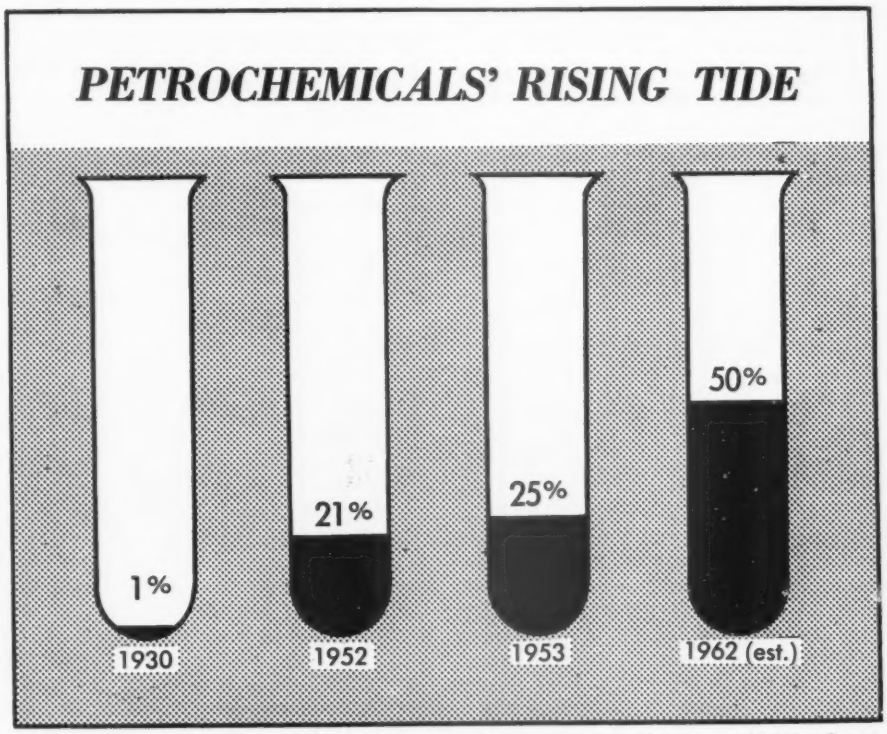


***PETROCHEMICALS OUTPUT** is rising rapidly in relation to total chemical industry output. From only 1% of the U.S. chemical industry's volume in 1930, petrochemicals now account for 25% of the industry's business, by 1962 are expected to represent a good half of it.*

Monsanto, a longtime power in petrochemicals, started construction of a giant polyethylene plant at Texas City late last year, with production slated to begin in 1955. Polyethylene, a plastic resin, is the offspring of heat, high pressure and ethylene, which is a petroleum product. Monsanto is also erecting a new research building at Texas City for research into monomer and petroleum chemicals. At Texas City, Monsanto now feeds petrochemicals to the Chemstrand Corporation (in which Monsanto and American Viscose have invested $160 million) to make "Acrilan" synthetic fiber.

Last year, American Cyanamid also took the plunge into petrochemicals produced from natural gas, opened its new Fortier hydrocarbons plant, on the Mississippi River. American Cyanamid spent $30.3 million on the plant, the largest initial investment at a new plant site it has ever made, and thoughtfully laid out the building so that it can be expanded later to double its present capacity.

In no mood to be left behind in the petrochemicals race, the Allied Chemical and Dye Corporation opened the company wallet for what President F. J. Emmerich's annual report terms "substantial expenditures" on research centering around its polyethylene products plant at Buffalo (N.Y.) and its new ethylene oxide-ethylene glycol plant at



***SINCE 1930**, petrochemicals have increased from 1% to 25% of total U.S. chemical output, are expected to account for 50% by 1962*

***THE WIDENING PETROCHEMICAL MARKET:** raincoats for small fry*

Orange (Tex.). It also opened new laboratories at Hopewell (Va.) and Buffalo (N.Y.) whose job will be to speed up Allied's petrochemical ventures.

The Hercules Powder Company, meanwhile, is completing an $8 million plant at Gibbstown (N.J.) that will turn out phenol and acetone by an exclusive process, getting its supply of raw materials from the refineries at nearby Marcus Hook. Hercules is also building a $4 million plant at Burlington (N.J.) for the production of DMT, the basis of a new synthetic plastic.

'Pete' & Prospects. So alluring are petrochemicals' prospects, that hardly a chemical or oil company could be found today not already in the field and planning to get into it still farther. All the major chemical producers have already plowed huge sums into petrochemicals plant and research, including such relative newcomers as Celanese, Eastman Kodak, Rohm & Haas and Mathieson. As one statistician put it: "The field is growing so fast that as soon as we compile a set of figures on the industry, they become obsolete."

How important a place petrochemicals have already made for themselves in the U.S. economy is indicated by the fact that it is now possible to clothe a man completely "in oil" down to nylon underwear, dynel socks, orlon shirt, dacron tie, a dacron or acrilan suit, and shoes with nylon uppers and styrene soles. Dr. Gustav Egloff, research director for the Universal Oil Products Corporation, believes, for example, that most organic chemicals now marketed will eventually be made from petroleum. Says he: "The possibilities are almost limitless when one considers that there are now over 600,000 organic compounds, and in a few years there may be over a million."

HEAVY CHEMICALS

Inorganics are still industry's workhorses, but the big profits are in new inorganics

From its earliest days, the U.S. chemical industry was almost entirely preoccupied with such basic heavy chemicals as chlorine, soda ash and phosphorus. These big tonnage (and low profit) chemicals are the workhorses of industrial chemistry. Of the 25 most-used bulk chemicals, 23 are inorganics.

But in recent years, the industry has shifted much of its attention to the more elaborate organic compounds. That this is more than just a passing fancy is amply shown by production records. Since 1942, inorganic chemical output has increased only about 65% while production of organic chemicals has more than doubled.

Research, of course, has helped spur this advance. In coal tars and other carbonaceous bases, chemists have unearthed a steady stream of new organic compounds with applications that run from autos to upholstery. But bulk chemicals have also benefited from the rolling back of technological frontiers. Refined into more specialized intermediate chemicals, the heavy chemicals have found new uses. Thus, while they are the chemical industry's slowest-growing products, they have benefited in proportion to U.S. industrial growth.

Plants & Profits. The proliferation of new organic chemicals and compounds is easily understandable: compared with heavy inorganic chemicals, the traditional building stones from which chemists produce industry's endless chemical needs, they are much more profitable. They are also cheaper in terms of the physical plant the chemical industry needs to produce them. For example, for every dollar of net property shown on its balance sheet last year, Monsanto, which specializes in elaborate organic synthesis, chalked up $1.71 in sales. Average for three largely inorganic companies: $1.45.*

Inorganic chemicals, however, still command bustling markets. Though much of U.S. chlorine output, for instance, is consumed within the chemical industry itself, a good percentage of it is ticketed to paper and pulp, water and sewage treatment operations. Still another tonnage chemical, sulphuric acid, boils through virtually every nook and cranny of U.S. industry, while ammonia, used largely in fertilizers, also finds its way into plastics. Thus some observers believe that inorganic chemical markets are more stable than organic chemical outlets.

Neat Trick. But in the chemical industry, whose first gospel is growth,

* The three: Allied Chemical & Dye, Penn Salt, Diamond Alkali.

***LONG-FINGERED ROTARY STAKER** at American Cyanamid's Brewster (Fla.) phosphate plant piles up rough-graded stone prior to sorting and shipping*

"stability" is synonymous with stagnation. Hence inorganic chemicals producers devote plenty of effort to improved technology. Allied Chemical & Dye, for instance, recently converted its Hopewell (Va.) ammonia plant from dependence on a more expensive coke base to use of cheaper natural gas. Similarly, Diamond Alkali, without expanding its physical size, doubled the capacity of its Houston caustic-chlorine plant by simply "looking around and using our ingenuity."

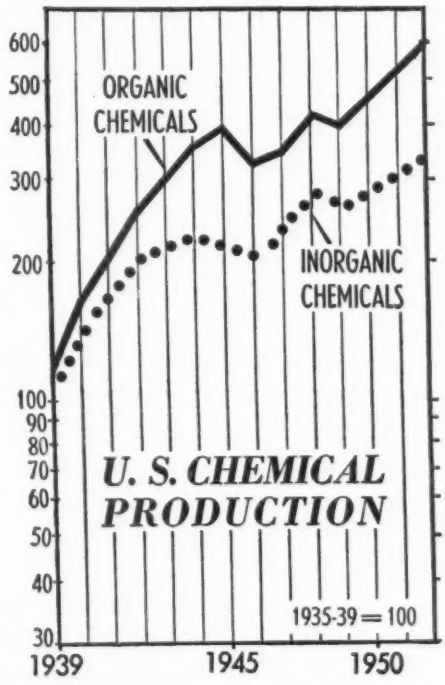
Diamond Alkali's Chairman Ray Evans is also bending his ingenuity to finding ways of upgrading chlorine into more profitable organics, and with considerable success. In the last five years organic compounds have climbed from a virtually nothing to more than 16% of Diamond Alkali's gross. In part Evans has turned this trick by blending his gas with still another raw material—ethylene. The resulting polyvinyl chloride has given Diamond a leg up into the fast-growing vinyl plastic field.

Further adding to his organic resources, Evans last year bought up smallish Belle Chemical Co. to get the advantage of its methyl chlorination process. Apart from a similar formula held by Dow Chemical, the process is said to be the only one of its type. It will be a big help in boosting Diamond Alkali's bulk chlorine into still more such higher end-products as silicon resins, drugs and solvents.

Chlorine Solution. Blended with benzene, chlorine has also been transmuted into insecticides. But in the last two years this field has not enchanted Diamond and other producers as much as it once did. Droughty weather has slowed bug infestations and insecticide sales alike, a climatological fact of life which has also caused Pennsylvania Salt Manufacturing Co. President George Beitzel some unhappy hours. To upgrade its chlorine, Penn Salt moved into the bugkiller business several years ago. Beitzel, who likes to keep his own bridge table stakes low, missed no bets in staking his company's move into organics. His laboratories have long been brooding over the still largely unplumbed mysteries of fluorocarbon chemistry, and two years ago Beitzel bought up Sharples Chemical Co., a pioneer in synthetic organics. Long an important Penn Salt customer (chlorine, caustic soda and ammonia), Sharples' lone plant is located at Wyandotte (Mich.). Coupled to it is a Penn Salt anhydrous ammonia installation which was expanded last year at a cost of $2.2 million.

Partially because of the Sharples acquisition, Penn Salt's sales have increased 25% since 1951. They got an additional lift last year from a new $8 million plant that went into production at Calvert (Ky.). Penn Salt's beehive of electrolytic cells at Calvert produce chlorine, caustic soda, sulphuric acid, hydrofluoric acid and anhydrous chloride in vast quantities. The latter compound is piped to vinyl-producing B. F. Goodrich Chemical Co. nearby.

Also chlorine-based, Hooker Electrochemical has a similar lien on plastics growth. With the help of a new cracking process installed last year, a Hooker subsidiary at Ashtabula (Ohio) supplies a neighboring General Tire Co. installation with hydrogen chloride for its plastics operations.



ORGANIC CHEMICALS, thanks to a multiplicity of new markets opened up by research, are gaining in tonnage far faster than the workhorse inorganics

Hooker still draws about 30% of gross from industrial and agricultural chemicals but has long been diversifying into more complex intermediate compounds. In 1940, process chemicals accounted for less than half of total sales. Last year they amounted to about 70% of gross. Hooker's conversion from a basic to a processed chemicals producer partially explains why sales have expanded a handsome 80% since 1949.

Growth Urge. Growing faster still is Mathieson Chemical, whose sales have increased 350% since 1949. A small, regional alkali producer in 1947, with only three plants to its property account, Mathieson has since come a long, long way, thanks largely to outside acquisitions.

Fired by ambitious president Tom Nichols, an ex-du Ponter, Mathieson has burst out of its chlorine-caustic soda shell into sulphuric acid and ammonia production and into still more growth-promising hydrocarbons and pharmaceuticals. Basic chemicals, which seven years ago provided most of Mathieson's sales, last year accounted for only about 40% of gross. The balance was fairly evenly split between agricultural chemicals and the ethical drug sales of the E. R. Squibb Drug Division, acquired in 1952.

Besides adding still another string to President Nichols' diversification bow, Squibb may prove a fine captive outlet for Mathieson's hydrocarbons. Having taken the petrochemicals plunge in 1950, Mathieson last year became the U.S.'s first commercial hydrazine producer. A tonnage chemical and a distant relative of ammonia, hydrazine for the most part will be invoiced to the U.S. for use as a rocket fuel. But it also shows promise as an explosive, as a drug base and plant retardant, and is said to be "one of the few inorganic compounds to exhibit a potential for producing offspring comparable to that of prolific hydrocarbons. . . ."

Major's Move. One of the U.S.'s biggest basic chemical producers, Allied Chemical & Dye, accounts for about 25% of domestic synthetic ammonia production, about 15% of sulphuric acid output and almost half of the nation's soda ash. Long noted as a bulk supplier to the process industries, Allied also is in the throes of an organic renaissance. The company's finances are symbolic of the big change. For almost all of its corporate life prior to 1950, when it borrowed $50 million (retired last year), conservative Allied had shied away from debt, preferring to grow almost entirely from accumulated capital. Helped by still more borrowing, last year's massive $200 million debenture issue, President Fred Emmerich has pumped more than $315 million into new plant since 1945.

Much of this seed cash has gone into improved plant, but plenty has also been earmarked for completely new ventures like the nylon plant currently abuilding near Hopewell (Va.). Expected to come onstream sometime this year, it will spin the synthetic fiber out of caprolactam, which in turn is fused out of phenol, ammonia and sulphuric acid. All of these chemicals are old Allied standbys. Also drawing close to production: a polyethylene plastics plant at Buffalo.

Like many another basic producer, Allied is heading for higher profit pastures. As one chemical man puts it: "There are lots of nice things you can do with inorganic chemicals, but the nicest thing of all is to upgrade them." This year, as never before, U.S. heavy chemicals producers are ambitious to do just that.

SULFUR

There is plenty of it around, but miners will have to find better ways of getting at it

OF all the heavy chemicals, the heaviest (in terms of production) is sulfur and its precocious offspring, sulfuric acid. That is as it should be since essential sulfur must go a long way. It takes 18 pounds of sulfur to make a ton of steel, 65 pounds to produce a ton of rubber. In every modern auto, 35 pounds of sulfur are invisibly distributed among the motor, bumpers, radio, heater, even the cigaret lighter. That means a lot of sulfur to satisfy the demands of U.S. industry, whose hunger for sulfuric acid seems to have no limits.

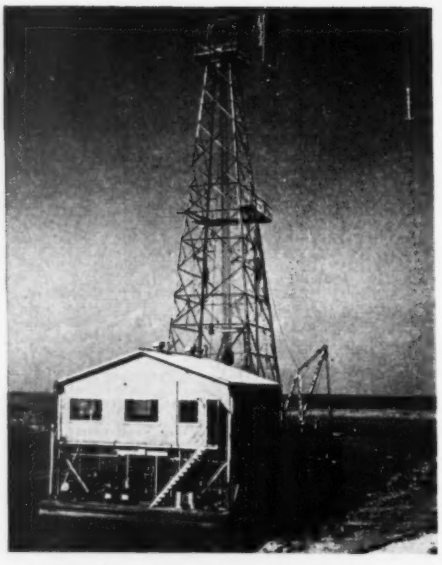
Doing their best to meet the demand are the four major miners of sulfur, whose diggings are deep in the sulfur-rich lands along the Gulf Coast: Texas Gulf Sulphur (which contributes some 55% of total U.S. output); Freeport Sulphur (33%); Jefferson Lake Sulphur (8%); Duval Sulphur & Potash (4%). Last year the Big Four unearthed 6,475,000 tons of sulfur, 80% of which was shipped off to sulfuric acid makers, who boiled it into fertilizer or turned it into chemicals for use in petroleum, paint, steel, rayon and a thousand other jobs. The rest, in non-acid form, went into paper pulp, dyes and rubber.

Drying Wells. Sulfur is a stubborn mineral that resists ordinary mining methods and has to be pumped out of the ground like oil. Of the total tonnage turned up last year, 7% came from pyrites (a metallic sulfide), 4% from smelter gases and 9% from sour natural gas and sludge. But a fat 80% came from native sulfur with the help of the sulfur miners' "Frasch" method, which involves sinking a well, pouring in super-heated water and then pumping the melted brimstone to the surface.

Up to now, the Frasch process has been the sulfur man's best friend. Because it is a relatively cheap method of mining, sulfur firms have been able to rack up some of the most impressive pre-tax profits in industry (see p. 23). Unfortunately, sulfur men also know that the Frasch windfall is fast playing out. The U.S. Bureau of Mines estimates that there is only enough sulfur left that can be mined by Frasch method for another 20 years. When the underground veins peter out, the industry will have to turn entirely to surface deposits (*e.g.*, pyrites), which are fortunately plentiful.

Even so, it is a rather unhappy alternative. Since pyrites run only about 40% pure sulfur (compared to 99.5%-pure sulfur pumped from underground), it will take almost twice as much sulfide ore (not to mention double the cost) to make the same amount of sulfuric acid. Though pyrites have accounted for 7% of sales in recent years, sulfur men gloomily point out that the only reason for its suddenly increased popularity is the sulfur shortage brought on by Korea.

Aside from pyrites, there are other ways of recovering sulfur—from smelters, refining and sour natural gases.



***FREEPORT SULPHUR'S** floating drilling rig at Garden Island Bay (La.) is much like oil rig. Cost: $250,000*

Since 1939, sulfur from those sources has jumped from 13,000 to more than 500,000 tons, today accounts for 8% of total production. The joker in the deck: it has meant an investment of about $40 a ton *vs.* $33 for a Frasch plant.

Sulfuric Future. Nevertheless sulfur farmers foresee a future fraught with demand, thanks to industry's ever-increasing appetite for sulfur. New mining methods will have to be found or old ones improved. The Big Four are already busily buying up pyrite lands and are deep in natural gas recovery operations. Some are taking options on newly developed (with the help of the Export-Import Bank) sulfur deposits in Mexico, which may be second only to the Gulf Coast in high-grade ores.

Some sulfur hunters also have other profitable sidelines to buoy them up. Freeport has as a subsidiary Nicaro Nickel, whose nickel deposits are the free world's largest excepting only Canada's International Nickel's (FORBES, *May 1*). Duval Sulphur & Potash (75% owned by United Gas) is in the happy position of being the nation's fifth largest producer of potash.

But sulfur miners they are first and foremost and sulfur mining they intend to push for all it is worth. Right now it is worth more than ever before. The price of sulfur hopped from $21 a long ton to $28 last year, but few users stopped buying. Sulfuric acid, for example, is still industry's favorite reagent and still costs four times less than hydrochloric acid, its nearest competitor.

If the sulfur producers can now perfect more efficient mining methods for getting surface deposits to market, they will thus be ready for the day when the Frasch method will have to be put out to pasture. That, for sulfur producers, is the sulfuric acid test.

***LIQUID SULFUR**, 99.5% pure in its natural state, is pumped from Texas Gulf Sulphur collection stations to this huge vat, then allowed to solidify*

FANTASTIC PLASTIC

It is a substitute for nearly everything, but there is still no substitute for it

LIKE Topsy, the U.S. chemical industry "just growed." But for plastics, just one crop in the chemical harvest, the rate of growth has been more like that of Jack's beanstalk. Unknown 85 years ago, and lightly regarded for most of the time since, plastics have suddenly become a billion-dollar development whose horizons seem virtually unlimited.

Today no fewer than 5,000 companies with payrolls embracing 200,000 workers are directly engaged in fabricating plastic products. The 3,000,000,000 pounds of synthetic resins turned out last year was worth $1,500,000,000, double the amount produced in 1949 and almost five times 1943's production. Yet it is, in the opinion of plastics men, only the beginning.

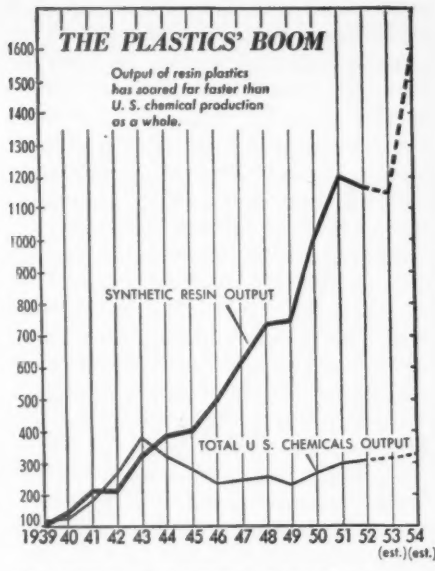
This year the Society of the Plastics Industry expects production to increase another 5%, bringing total output to 3,150,000,000 pounds. That will put the plastics plungers in the happy $1,575,000,000 sales class. Moreover, having doubled its investment in plastics plants since 1946, and having already passed the production mark set by aluminum, the industry believes that by 1957 it will have increased synthetic resin production to triple last year's showing.

Billiard Ball Beginning. All this is a far cry from plastics' humble birth, which began, oddly enough, with the common billiard ball. One day in 1868, John Wesley Hyatt, an earnest, plodding inventor casually tossed a billiard ball from hand to hand and wondered why it was so expensive. A small, perfect sphere capable of withstanding persistent abuse, its function was to hit other small perfect spheres, which then obligingly dropped into deep pockets on the side of a table. Hyatt reasoned that for so pointless a purpose some material other than costly ivory could be substituted.

No less interested in the problem were the billiard ball makers themselves. Not only was the ivory-tusked elephant hard to come by in 1868, but he was also stubbornly uncooperative in parting with his pointed promontories. Hyatt (whose name was eventually given to General Motors Corp.'s Hyatt Bearing Division) began experimenting, soon came up with the idea of mixing pyroxylin (from cotton linters and nitric acid) with solid camphor. What came out was a cellulose nitrate that he called Celluloid. It turned the trick for billiard balls and gave the U.S. its first commercial plastic.

Celluloid quickly went into collars, cuffs and shirtfronts that could be wiped clean with a damp rag, and into window curtains in the early autos. Even dentists saw the possibilities of substituting pink Celluloid for hard rubber in dental plates. But for all its versatility, it was years before plastics were used for anything more than novelties and notions.

Birth of Bakelite. Then, in 1909, Dr. Leo Henrik Baekeland, searching for a substitute for shellac, found the secret of a resin (phenol formaldehyde) which, under intense heat, became insoluble and could not be re-melted. Baekeland called his amazing material Bakelite (borrowed from his own name), and promptly began adapting the discovery to commercial use. His patents soon included a phenolic that could be cast (marbleized clock bases), a compound that could be formed under heat and pressure (electric iron handles) and solutions that could be used in making laminates (restaurant table tops).



***PLASTICS' GROWTH CURVE** has yet to level off. Chart shows relative growth where 1939 = 100*

Born in the test tube, subsequent plastics were given life by bemused chemists who shuffled and reshuffled molecules to bring forth marvelously pliant materials with even more remarkable properties. Plastics, industry suddenly discovered, could be stretched and squeezed, formed and molded. Impervious to corrosion, moisture and salt water, yet strong and light, they could be made hard or soft, solid or transparent. And they were cheap. Though it was true that other materials (*e.g.*, wood, glass) could do things plastics could not do, it was even more significant that plastics had other properties that conventional materials could never hope to copy.

Soon new plastics families with jawbreaking chemical names began flowing from the laboratories. The '20s saw the introduction of the alkyds, which made possible modern auto finishes. In the '30s, the raft of new plastic developments included the ureas, polystyrenes, acrylics, melamines, vinyls and cellulosics. After that polyethylene, the silicones and epoxys were added to the roster of plastic personalities.

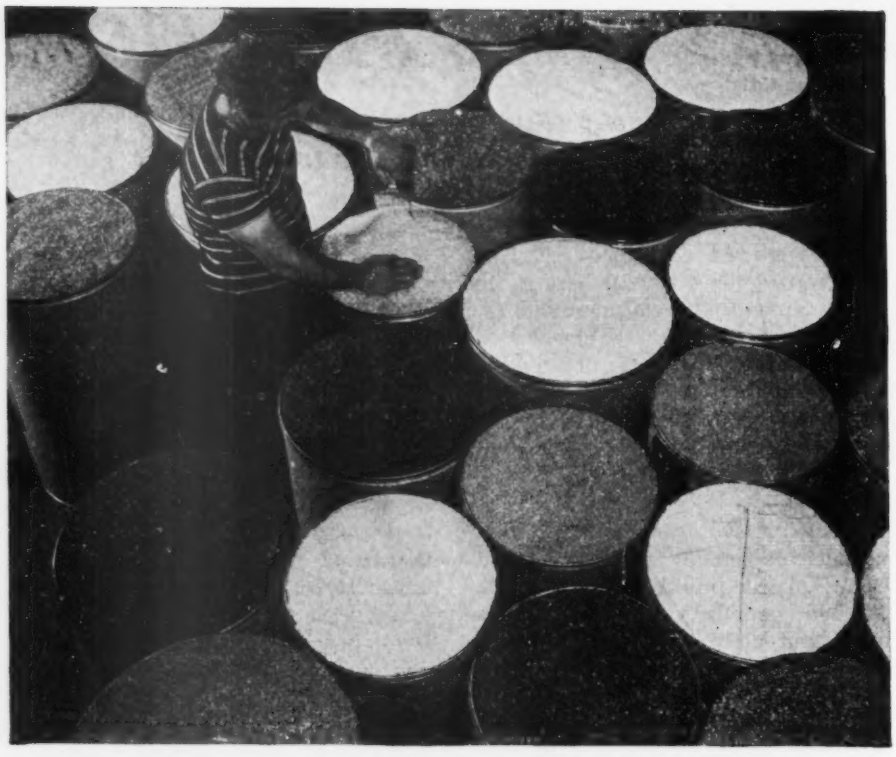
Liberated Plastics. But it was not until World War II came with its material shortages did plastics get the chance to show what they could do. Suddenly the little substitutes that were intended merely as replacements for something better began showing up in all sorts of

***PLASTIC ALEMBIC II**, with body of fibrous glass and Vibrin polyester resin, is rolled out by builder, Naugatuck Chemical division of U.S. Rubber*

demanding war jobs—and doing them well. From radar equipment and airplane canopies to medical kits, plastics materials proved they could be applied to almost any job that such hard-to-get standbys as metal, wood, rubber and glass once did. Even more important was the fact that civilian consumers began making friends with plastics. From about that moment on, plastics got out from behind Hyatt's eight-ball.

They have since added beauty and durability to such things as clothes, autos and housewares. In the process, they have almost completely revolutionized industries like paint, fabrics, sporting goods, homebuilding and toys. The jobs that plastics can do are almost beyond number. About 40% of all plastics go into such things as electrical parts, buttons, bottles, TV cabinets, tail-light lenses, dishes, kitchenware, toys, toilet articles and appliance parts. Another 20% finds its way into surface coatings, auto finishes, lacquers, appliance enamels and rubberized, washable wall paints. In sheet or film form, 15% is used for draperies, storm wear, upholstery and packaging. Adhesives for furniture, plywood, panelling, pressed board and counter tops take 7%, and still another 5% is used in processes for controlling the creasing or shrinkage of textile fibers and in giving "wet strength" to paper. The rest perform thousands of other tasks.

Aunt Plastics. Most plastics are by now so well known to consumers that their multisyllabic names have been boiled down to a point where they sound more like maiden aunts ("poly" and "viny"). In the packaging field alone, one of the polys, polyethylene, has created a revolution all its own. Deodorants, shampoos and baby powder can pretty well expect a tough competitive row to hoe unless they come in squeezable poly bottles. One deodorant, Stoppette, has gone so far with poly as to plug its product in term of its container: "Poof!"



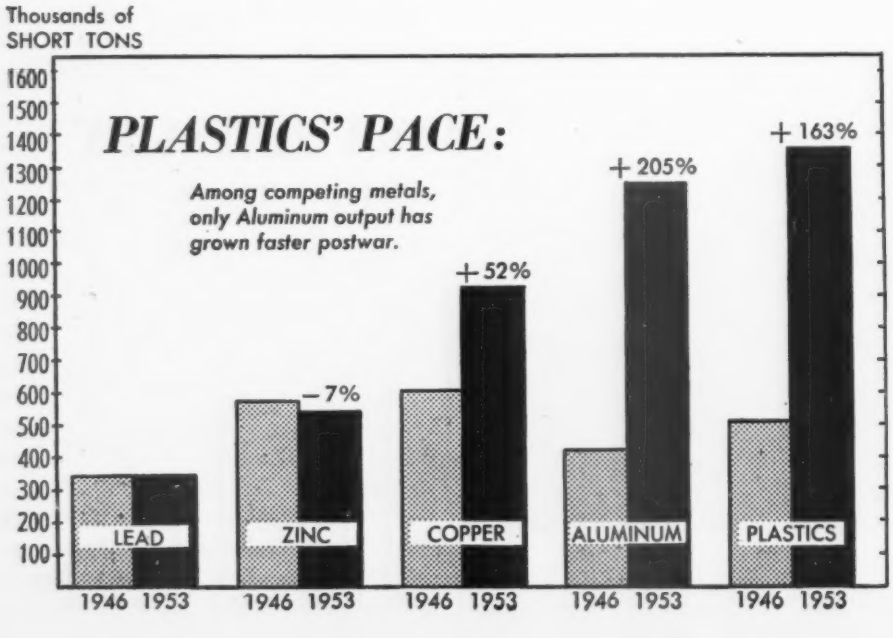
***DRUMS** brimming with multi-colored plastic molding powder called Lustrex are inspected at Monsanto plant in Springfield (Mass.)*

Popular polyethylene was first discovered 21 years ago by Britain's Imperial Chemical Industries, Ltd. Because of its non-conductive properties, it was used extensively in World War II as insulation for high frequency electronic equipment. Today, thanks to poly's performance, carrots come in bags instead of bunches, and all other produce stay fresh longer because they are wrapped in it. Even perishable bananas are now shipped from Central America in shrouds of tough, durable poly, which keeps moisture in and prevents bruising as the hanging stalks bump each other in ships' holds. Scarcely a few years ago it was unthinkable that four pickles and enough pickle juice to float them in would come in a bag. Poly has made it possible.

Billion Pound Poly? So impressive is poly's flexibility, its resistance to corrosion and the fact that it is odorless, tasteless and light enough to float in water, that several goliaths of the chemical industry are taking a gigantic gamble. Some eight plastics producers (including du Pont, Union Carbide & Carbon, Allied Chemical & Dye, Monsanto and Dow) are so convinced that poly has only begun to catch the public fancy that they are betting an estimated $250,000,000 that poly will become the first plastic to reach a billion pounds a year production.*

Poly production has been doubling each year since 1950 and the 1953 output of 200,000,000 pounds is expected to triple again by 1957. Beginning late this year, the polymakers expect to put up one new plant or expand production each quarter until 1957, at which time they will be turning out 600,000,000 pounds a year.

Plastic Personalities. But a big push in one plastic is no signal for a general offensive in all. Zealously individualistic, one family of plastics does not generally have much in common with an-



* Also among the leaders: the polyvinyls (shower curtains, adhesives, garden hose); polystyrene (toys, housewares).

other. Plastics are either thermosetting (*i.e.*, heat resistant) or thermoplastic (*i.e.*, heat-sensitive). Aside from that, they have their own peculiar properties, their own problems of fabrication and their own markets to fight for.

Among the thermosetting plastics, phenolics (radio-TV cabinets) and alkyds (auto finishes) and the thermoplastic styrenes (kitchenware) and vinyls (safety glass) have made the best postwar progress. But such new plastics as polythylene, silicones (waterproof coatings) and epoxys (adhesives) have made even greater strides, mostly because they are new.

Still, the players in the plastics game have found that newness, while conducive to sales, can also be a handicap. The woods are full of fabricators who have brought out a plastic product without first fully understanding its capabilities and its shortcomings and properly passing the information along to the public. Housewives got a poor impression of plastic devices that melted and curled up if they were left too close to a stove or radiator.

Another problem is keeping plastic quality up to snuff. A case in point is that of the vinyl raincoat, a good, lightweight, waterproof garment that costs relatively little. Yet last year sales of vinyl raincoats slumped 20% below 1952. Reason: some manufacturers stinted on materials, put out a coat that soon outlived its usefulness. The Society of the Plastics Industry now has a code of quality standards for vinyl film (which some producers think is not nearly as strict as it might be).

The Plasticreators. Though the industry has some 5000 to 6000 fabricators crowded into competition, there are only 50 companies that do the actual synthesizing of the ten basic types of plastics. Union Carbide, the world's No. 1 plasticreator, makes eight; Dow Chemical, with strong emphasis on the fast-paced styrenes, handles six; Dow's Dow-Corning subsidiary (which it owns jointly with Corning Glass) is one of the bigwigs in silicone products, for which a tenfold expansion is in the plastic cards by 1960.

Monsanto is bringing out six plastics now, but will diversify by one more when its polyethylene plant is completed next year. Also producing a half-dozen of the wonder materials is mighty du Pont, which, with Union Carbide, currently leads the polyethylene parade. American Cyanamid (with three) is big in alkyds and is a kingpin in the melamines (buttons). Rohm & Haas deals in four types and (with du Pont) dominates one of the offspring of the acrylic family, polymethyl methacrylates (Plexiglass). Celanese and Eastman Kodak, familiar names in cellulose acetate rayon, are also big names in cellulosics. In addition, Kodak, Spencer and National Petrochemicals (jointly owned by Panhandle Eastern Pipe Line and National Distillers) will soon plunge into the polyethylene line. Kodak is already a pioneer in the relatively unexplored field of butyrate (a cellulosic) plastic pipe for oil pipe lines.

Joining the Enemy. Rubber and glass companies, instead of fighting the enemy, have wisely decided to join it. Rubber's Big Four (Firestone, Goodrich, Goodyear, U.S. Rubber) are major producers of vinyls and styrenes

***POLYSTYRENE BEADS** expand many times in size but not in weight*

(synthetic rubber ingredients). Pittsburgh Plate Glass has a particular interest in the epoxies, which strengthen glass fibers for such products as fishing rods, boats and sports cars and which may triple production this year.

A striking sidelight of the plastics industry is that it has few companies it can really call its own. The only two sizable firms engaged solely in plastics are Catalin and Durez Plastics. But both firms somehow chose the wrong horse to ride. Their specialty, the phenolics, have sold tolerably well and new jobs have been found for them to do. Still, the phenolicreators must face the fact that except for the cellulosics, which some plastics men think have just about reached their zenith, phenolics have shown the least impressive growth trend among the plastics in the last ten years.

Yet it is a heartening characteristic of the industry that under such circumstances few plastics men ever say die; they merely reshuffle the molecules and find something else for the same plastic to get into. Phenolics, for example, are the oldest of the workhorse plastics. They had a 49% sales gain in 1953, but then fell into a slump mostly because of a drop in radio-TV sales which, in turn, hit sales of cabinets made of phenolics. Now the bright hope is the fat new air-conditioning market. Phenolic makers think their plastic can go into 500,000 one-piece air-conditioning cabinets by 1955.

Versatile Vinyl. When vinyl film for raincoats and curtains got a poor press, fabricators merely used the same plastic in something new: backyard wading pools. The Ideal Plastic Co. and its affiliate, Ideal Toy Co., sold $30,000,000 worth of pools last year *vs.* exactly nothing in 1946. Other new uses include vinyl linoleum (sales up 100% in 1953) and vinyl garden hose (up 25%).

There would seem to be no limits to plastics' versatility. The U.S. Navy used plastic cocoons to mothball its inactive ships. The F-84 Thunderjet fighter plane has no less than 225 reinforced plastic parts. The new $35,000,000 trans-Atlantic telephone cable is encased in plastic. Recently Chevrolet unveiled its sleek, striking Corvette sports car with a body made almost entirely from plastic-enforced glass fibers. Other automakers such as Chrysler, Ford and GM's Fisher Body are working with plastic dies instead of time-consuming steel ones.

Plastics save hours of time and cost about 30% less than conventional dies (in large-scale production, they may save automakers as much as 70%). Their biggest shortcoming: they tend to chip and break down when used for any great length of time. But plastics men are confident that another shuffle of the molecules will set things to rights. Said one Ford engineer: "You've got to creep before you walk. The future of these dies could be good if we don't try to move too fast."

Fast Pace. Having already moved at breakneck speed since the war, plastics men are showing no signs of slowing down. If current activity is any gauge, the best is yet to be. Enough plastic was turned out last year to supply each person in the U.S. with more than 17 pounds. How much more consumers can use is still anybody's guess. But if the current rate of growth continues without let-up, by 1975 the U.S. can expect to be a plastics power second to none, with annual production of 12,000,000,000 pounds worth (at present prices) somewhere around $5,000,000,000. The goal, plastics men insist, is ambitious but not unattainable. All they will have to do is find the right formula for shoving around those molecules.

AGRICULTURAL CHEMICALS

The mushrooming industry has run into weedy years, but world food demands promise a bumper crop ahead

In 1944, with War II still in progress, a typhus epidemic descended on Naples, Italy, threatening to wipe out the city and possibly spread across the entire peninsula. The U.S. Fifth Army met the threat head-on, dusted 1,300,000 bug-infested civilians with a lethal insecticide that knocked the germ-carrying lice sprawling. The story, one of the most dramatic of the war, made the insecticide famous to newspaper readers everywhere as DDT, and sent the whole agricultural chemical industry on a boom that approached blue sky heights, faltered momentarily and now appears ready to resume climbing.

The Big Spade. The startling growth of agricultural chemicals (fertilizers, animal feed, weed killers, insecticides and pesticides) use is clearly reflected in bumper farm production figures. In 1900 one farmer could provide food for himself and seven non-farmers. Today a single farm worker wields a giant spade that feeds 14.5 persons and carries 30% more food than it did in 1939, although cultivated acreage has not increased appreciably since then. Behind the food production figures stands a solid array of impressive agricultural chemical figures: in 1953 American soil was enriched with 22,776,000 short tons of fertilizer mixture *vs.* only 13,202,000 tons in 1945, 7,100,000 tons in 1914. In addition, U.S. farmers in 1952 spent more than $200 million for chemicals to battle the 82,500 different insect species and 2,600-odd mites and ticks that crops are heir to. Says Dr. M. T. Goebel of E. I. du Pont de Nemours and Co.: "The increased output for human consumption during the last thirty years has been achieved one-third by mechanization and two-thirds by increased productivity brought about basically by application of biological and biochemical research to agriculture."

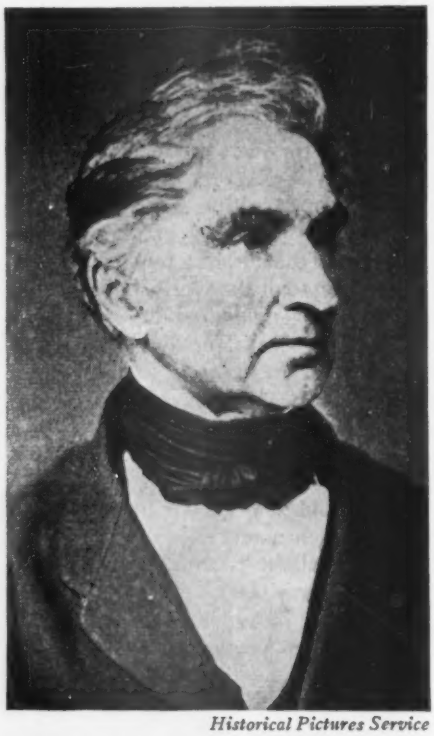
But for the chemist, an even bigger job still lies ahead. In 1952, the Materials Policy Commission estimated that, to meet normal future needs, U.S. food production must be increased 41% by 1975 and non-food farm production (including cotton, wood, tobacco) 25% —a combined increase of 38%. This gain must be made despite twin handicaps: a 10% drop in farm population and no significant additions to the 1,142,000,000 acres of land now being tilled. One farm worker will have to grow enough to feed 21 people.

Digging In. For the accomplishment of this modern miracle, the U.S. will have to look mainly to the agricultural chemical industry, which now annually screens some 10,000 different compounds in its search for new chemical tools and weapons. Chortles one chemist: "We're just never going to run out of problems."

Digging into these problems, however, adds up to a research bill that hovers around $10 million a year. One chemist now estimates that getting just one pest-killer to market requires "three years and a million dollars."

But the research chemists have behind them solid miracles to justify the expense. Three of them:

- Defoliants that make leaves drop off plants, but otherwise do not harm them—a boon to the cotton planter who must pick his crop by hand or machine.
- Greenbug-controlling insecticides that have boosted wheat yields in Oklahoma by as much as 400%.
- More than 350,000 acres of rice saved in four days by airplane spraying of a chlorinated hydrocarbon (dieldrin) to check the attack of bugs of the leaf-miner class.



Historical Pictures Service

JUSTUS VON LIEBIG *(1803-1873): his experiments pointed the way*

Insects' World. But the road has not been entirely smooth for insecticide producers. After DDT captured the popular imagination and rocked the insect world (which eventually punched back itself with genetical DDT-immune mutation), the insecticide business boomed fantastically with a terrific demand from farmers but a throttling shortage of basic supply chemicals. A host of new companies leaped into the market. As a result, DDT broke from an original 1945 price of $1.60 a pound down to around 30c in 1948, shaking out many marginal or high-cost producers.

Bright Horizon. Last year was one such year of "profitless prosperity." But pesticide producers had some comforting facts to mull over while waiting for the cyclical pattern of high pest population to repeat itself: 1) substantial recent purchases of DDT by the World Health Organization and good prospects for greater use of insecticides in some Asian countries; 2) steadily increasing use of farm chemicals on forest crops, grasslands, forest areas and in livestock sprays; 3) continuing strong demand for some of the newer lines, and a rapid pace of development of new and improved products. Lea S. Hitchner, executive secretary of the National Agricultural Chemical Association, last month predicted an improvement this year.

As for fertilizers, Ralph B. Douglass of the Smith-Douglass Co., Inc., was thoughtfully optimistic: "It would be too much to expect that consumption of fertilizers will continue the uninterrupted increase that has taken place since the war. But the long-range trend is still upward."

Alphabetic Progression. Putting starch into the upward trend are the host of new products constantly being developed by the agricultural chemical industry. DDT was followed in 1946 by BHC (benzene hexachloride), a compound developed in England and France and produced in America by the Hooker Electrochemical Co. BHC has the great advantage of attacking the cotton boll weevil and some aphids that are unaffected by DDT. Also in 1946, du Pont brought out methoxychor, which can be used to rid dairy cows of flies and other annoyances.

Then came the first in the parade of strictly American insecticides: chlorodane, which fights grasshoppers, army worms, cutworms, roaches and ants, and other pests. It was synthesized by Dr. Julius Hyman, whose company later was bought out by the Shell Chemical Co. In the same year, Ameri-

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Dragon's Teeth Sprouting? No, these are steel bearing piles in the foundation of a dam spillway. When the dam is finished, you'll never know the steel piles are there. But they'll be working just the same, for strength and safety, as steel so often works unseen in buildings, highways, pipelines and power plants.

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can Cyanamid brought out TEPP, used principally by fruit growers against orchard mites and aphids.

Toxaphene was the second new all-American insecticide of importance. The Hercules Powder Co. developed it in 1946 from turpentine and resins. The name originally was a Hercules trademark, but the company later released it as a generic label. After toxaphene, the stream of new products became a roaring flood.

For the Good Earth. If insecticides and pesticides are young, chemical fertilizers rank as one of the earliest—and one of the most significant—contributions of chemistry to man's welfare.

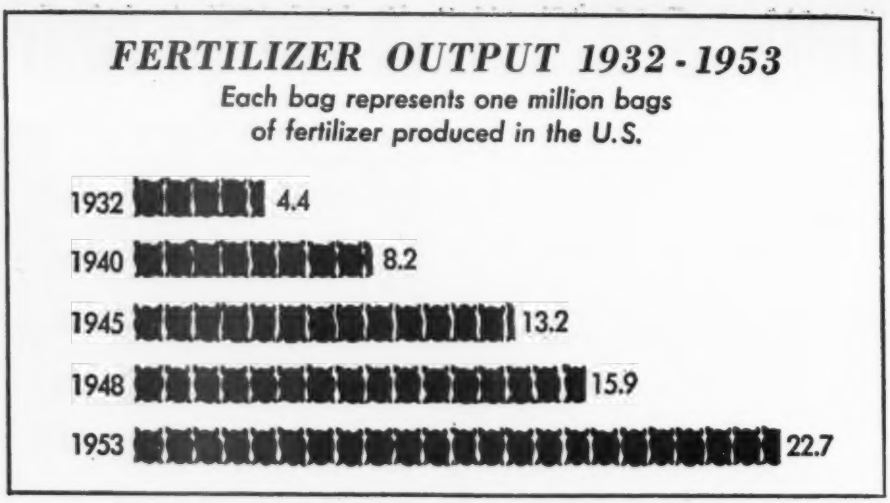
It was somewhat over 100 years ago that Justus von Liebig developed the principles on which modern scientific agriculture rests. Less than a quarter century after the English economist Huxley's prediction, in 1887, that Western civilization would disappear in 50 years because of a lack of soil nitrogen, Dr. Fritz Haber discovered a method for the direct synthesis of anhydrous ammonia.

The first synthetic ammonia plant was built in the U.S. in 1921, but by War II, U.S. annual capacity had reached only 400,000 tons—80% of it produced by Allied Chemical and Dye and du Pont. Almost all of the nation's capacity depended on coke and steam as the hydrogen source, and it was not until 1931 that Shell built the first ammonia plant based on natural gas as the source of hydrogen.

The U.S.'s ammonia-nitrogen capacity tripled during War II (priceless in fertilizer, nitrogen is also a prime ingredient in munitions). Today the nation's production of 2,286,000 short tons of synthetic ammonia is double that of 1945, and still another million tons will come into production this year.

Although fertilizer consumption was not much greater in 1939 than in 1914, the nutrient content per ton rose from 15% in 1914 to 20% in 1939. In the past 14 years, consumption has risen 150% and nutrient content to 25%. The Materials Policy Commission now believes that fertilizer consumption must jump 200% (to 60,000,000 tons) by 1975 if the increase in food production needed by then is to be achieved. The Department of Agriculture estimates that U.S. farmers will be using 30,000,000 tons of fertilizer a year by the end of this decade.

From the Ground Up. In 1854, William Russell Grace, a refugee from the Irish potato famine, saw money to be made by selling guano fertilizer (bird droppings). This month the wheel will come full turn when stockholders of his W. R. Grace & Co. will vote on merging the company with the Davison Chemical Corp., which once billed itself as "Grinders and Acidulators of Old Bones and Oyster Shells." Davison, which operates nine fertilizer plants, is a major producer of sulphuric acid, a key ingredient in fertilizers. Davison also mines and processes its own phosphate rock (800,000 tons annually) and produces superphosphate.



If the merger is approved by stockholders of both companies, Grace will be solidly entrenched in agricultural chemicals. Its new $20 million plant near Memphis (Tenn.) is set up to produce 72,000 tons of nitrogen, with the agricultural portion of its output taking three principal forms: synthetic urea fertilizer compound, urea feed and anhydrous ammonia.

Hand to the Plough. The Mathieson Chemical Corp. also has gone more deeply into agricultural chemicals in recent years. In 1949, Mathieson took over two smaller companies to become a major producer of sulfuric acid, which it now makes in six plants. Mathieson, a pioneer in the production of synthetic ammonia, purchased the Government-built, ammonia-from-gas plant at Lake Charles (La.) after War II, and later leased the $75 million Morgantown Ordnance Works, which produces ammonia from coal.

A major part of the company's ammonia production is used in its high-analysis fertilizer plant at Pasadena (Tex.). Mathieson, which makes synthetic fertilizers and agricultural specialties in six plants, blazed the trail in high-analysis pelletized fertilizers, much favored by farmers for its nonclogging qualities. Last year Mathieson acquired John Powell & Co., adding to its agricultural distribution facilities.

The Virginia-Carolina Chemical Co., another big fertilizer producer, recently noted in its annual report that, despite a drop in farm prices and drought, the use of the company's commercial plant food still continues to bubble along at peak levels. To keep up with demand, Virginia-Carolina is completing a triple superphosphate plant at Nichols (Fla.). Observes Virginia-Carolina President Joseph A. Howell: "The outlook for the coming year in phosphate chemicals appears bright."

In fertilizer phosphates, the American Agricultural Chemical Co., the International Minerals and Chemicals Corp., American Cyanamid and two diversified meat packers—Armour and Swift—are major factors. Leading potash producers are the Potash Company of America, International Minerals and U.S. Potash.

The insecticides and herbicides, made from chlorinated hydrocarbons, are dominated by du Pont, Dow Chemical, Monsanto, Rohm and Haas, American Cyanamid, Hercules Powder, Hooker Electrochemical, Pennsylvania Salt Manufacturing Co. and the Food Machinery and Chemical Corp. But a score of other smaller companies are also in the field.

Green Pastures. To enrich the soil of producers' future financial reports, the nation's agricultural chemists have a rich mixture of other statistics to do something about. Some 95% of U.S. grasslands and 75% of U.S. croplands still receive no fertilizer, and only 60% of America's farmers use any fertilizer at all. The 30,000,000 acres now "weeded" by chemicals represent only 10% of the nation's total cropland.

Last year—while weeds choked off $5 billion in crops—insects ate up another $4 billion, disease ruined $4 billion and storage deterioration brought the overall loss to a huge $15 billion. The American farmer now spends less than 5% of his annual income for controlling the enemies that destroy up to 30% of his crops. When the farmer realizes what losses he is sustaining by doing so, the agricultural chemicals industry will itself have in store for it a bumper crop of good years.

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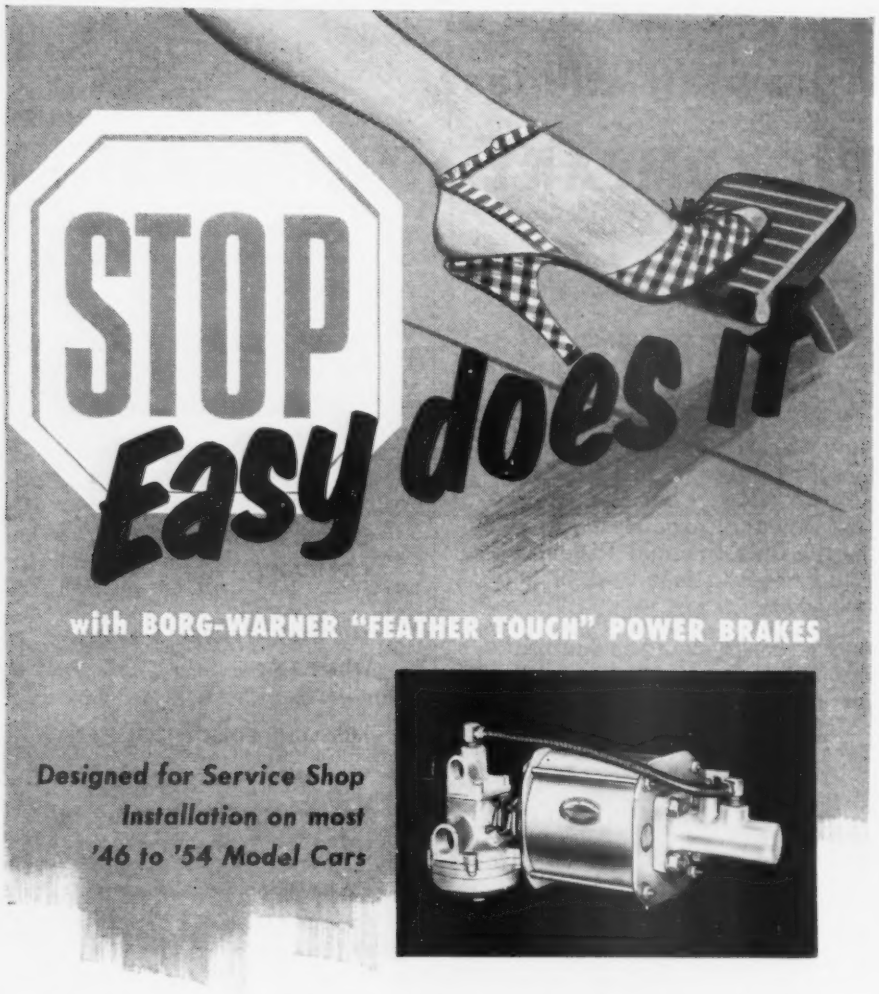
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COAL CHEMICALS

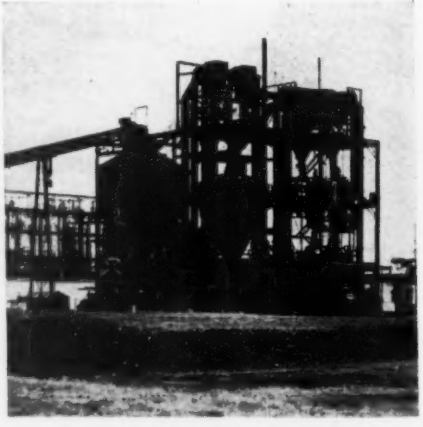
New frontiers, hardly yet breached, are opening up in coal chemistry

CRUSHED by the competitive pressure of cheaper oil and natural gas, miners are faced with the realization that coal may be nothing more than a vegetable fossil after all. But to Koppers Co. and Pittsburgh Coke & Chemical Co., both of which were originally organized around "a lump of coal," the black mineral spells "black diamonds" indeed.

Hot Ovens. Coke oven construction, coal tars and preservatives generate the lion's share of Koppers' earnings. Most of Pittsburgh Coke's net comes from a combination of pig iron, cement and coke. But the fastest-growing segment of both companies' operations are coal-tar chemicals with such exotic names as benzol, pyridine, tolulol, xylol and phenol.

Since V-J Day, Koppers' President Brehon Somervell and Pittsburgh Coke President Richard Mather Marshall have both earmarked a big percentage of expansion capital for new chemical plant. Both companies have been expanding. But smaller Pittsburgh Coke, possibly because it has plunged into chemicals more deeply than its Steel City neighbor, has grown faster. Since 1949 Pittsburgh Coke's sales have increased 128% *vs.* only 40% for Koppers.

Starting with a tightly integrated coke-pig iron-cement base Pittsburgh Coke's Marshall has painstakingly dovetailed his chemical efforts. The coke ovens not only give off slag but aromatic chemicals. One of them—benzene—is blended into herbicides



***UNION CARBIDE'S** Charleston (W. Va.) coal hydrogenation plant breaks coal down into an oil paste, liquefies it in the high pressure unit at right*

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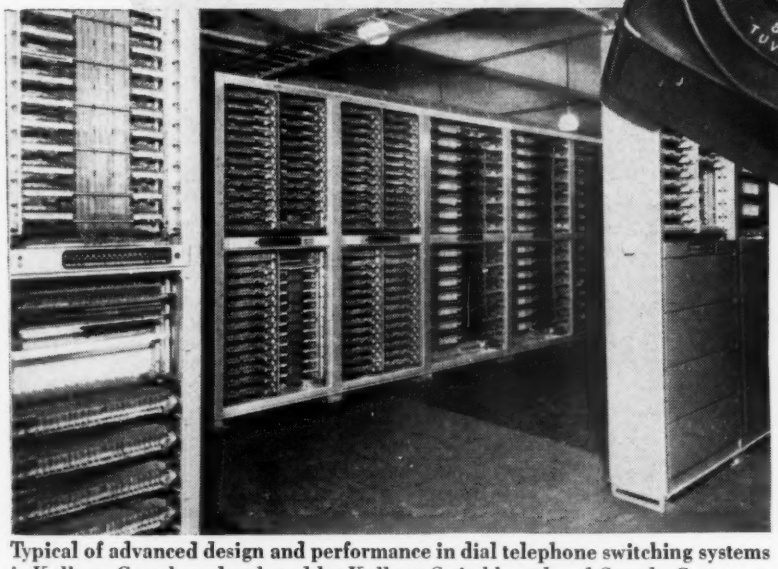
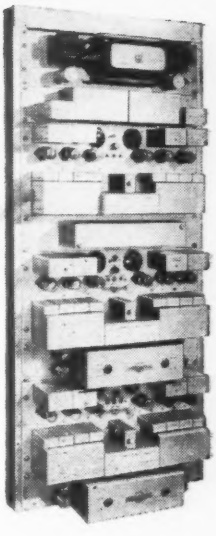
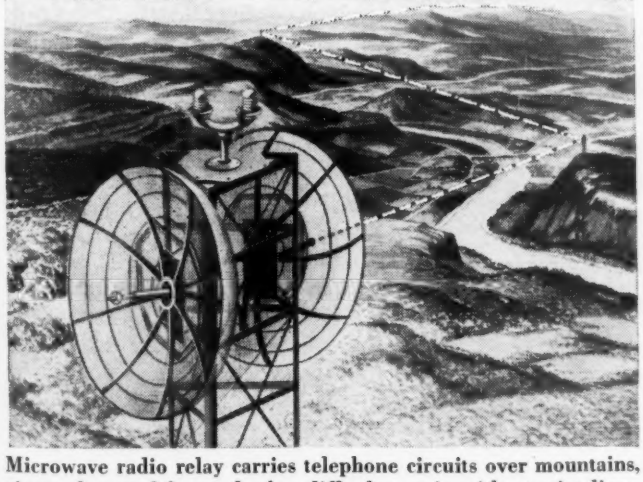


Typical of advanced design and performance in dial telephone switching systems is Kellogg Crossbar, developed by Kellogg Switchboard and Supply Company, a division of IT&T, for use in telephone exchanges. Together with Kellogg Relaymatic, as well as Step-by-Step and Rotary dial switching equipment made by Federal Telephone and Radio Company, also a division of IT&T, Kellogg provides a complete range of automatic switching systems as well as other equipment and supplies for the independent telephone industry.



Greater capacity for existing telephone lines is made possible by the compact and economical "carrier" system of telephone communications. Carrier can provide as many as 18 additional circuits, superimposed on existing lines without the necessity of stringing more wires. Short, medium and long-range types for voice as well as signal transmission are available. With the Kellogg Type No. 5 Carrier, shown at right, four simultaneous conversations may be carried on one wire circuit.



Microwave radio relay carries telephone circuits over mountains, rivers, deserts, lakes and other difficult terrain *without wire lines.* Between Bartow and Tampa, Fla., the Peninsular Telephone Co. has installed the first independent telephone company microwave link connecting with the nation-wide inter-toll dialing system. The complete equipment was designed by Federal Telecommunication Laboratories, research division of IT&T at Nutley, N. J.

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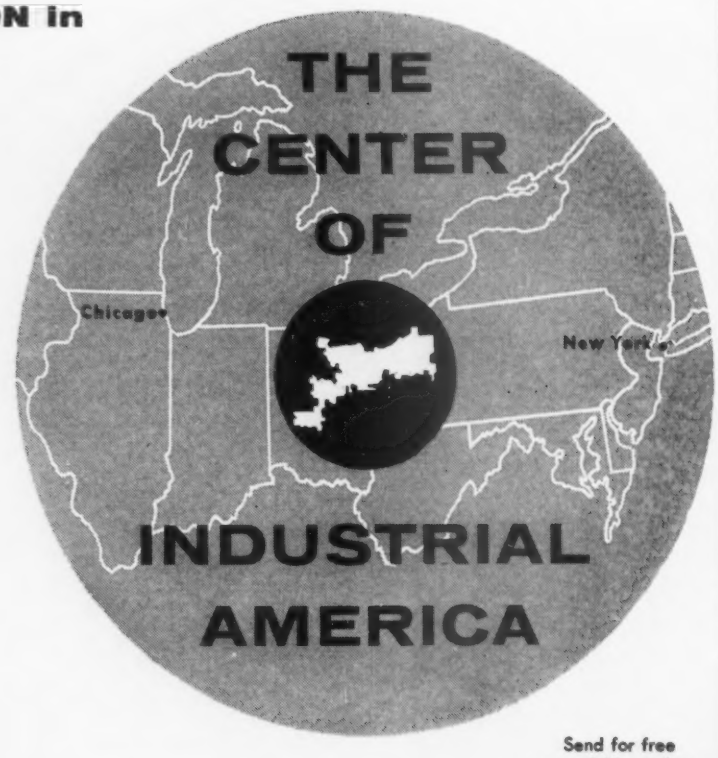

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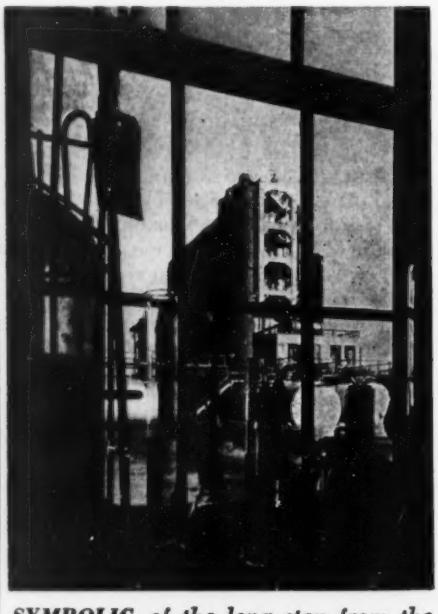
and insecticides. Others are upgraded into plasticizers for the vinyl resins trade. Naphthalene distilled in this same process is further upgraded into phthalic anhydride, which is used in the manufacture of paints and protective coatings.

Pittsburgh Coke's latest test tube venture—its newly-established fine chemicals division—will hew to the same "waste not, want not" pattern. It hopes to crack textile, pharmaceutical and other specialty markets, will feed on the entire range of Pittsburgh Coke's lower oils and chemicals.

Also derived from Pittsburgh Coke's coking operations are a host of other compounds. Among them: hydrogen cyanide, which, when converted to sodium cyanide, is used in electroplating and hydrogen sulfide. Supplementing purchased sulfur, the hydrogen sulfide is burned off into sulfuric acid, which in turn combines with ammonia to produce commercial fertilizers.

Pete & Poly. In much the same fashion, Koppers gets everything but the cinder out of its coke. Unlike its Neville Island neighbor, however, Koppers has taken the petrochemicals plunge. Wall Streeters have long expected Pittsburgh Coke to follow suit, but it shows little inclination to do so.



***SYMBOLIC** of the long step from the theoretical to the actual are the test tubes in the foreground and the production unit in the background at Koppers Co. Kobuta (Pa.) styrene plant. This same long step has carried Koppers from the "lump of coal" on which it was founded to polystyrene and polyethylene plastics, has added impetus to sales and profit margins alike. By focusing on coke ovens, coal chemistry has created new wealth out of vapors that used to go up the chimney, but as yet offers no real competition to petrochemicals.*

Marshall is not altogether sure that the field is not already overcrowded. General Brehon Somervell suffers from no such inhibition.

Koppers' Williams plant near Port Arthur (Texas) blends benzene and ethylene supplied by abutting (and sister Mellon venture) Gulf Oil into the intermediate ethylbenzene which is then shipped on to Kobuta (Pa.) for processing into styrene, a molding compound, and polystyrene plastics. Adjacent to the Williams plant, surveyors have already staked out the broad outlines of a polyethylene installation which is slated to come on stream sometime next year.

Black Magic. But both Koppers and Pittsburgh Coke take a back seat to venturesome Union Carbide & Carbon in a still more promising field: coal hydrogenation. This process, which liquefies coal and combines it with hydrogen to change the molecular structure, is still only in the experimental stages. But it may one day result in coal rivaling oil and gas as raw material for chemical production.

As the first (and still the only) company to put a coal hydrogenation unit in operation, Union Carbide is repeating the pioneering it did in petrochemicals three decades ago. Last year, Union Carbide produced aromatic chemicals from coal in tank car quantities for the first time in history.

Early trys at hydrogenation centered almost exclusively around the possibilities of coal as a source of synthetic fuels. During War II, for instance, oil-hungry Germans extracted almost all of their aviation gas by using a rudimentary form of the process. Carbide, however, is single-mindedly focusing on chemicals. Blazing uncharted trails, the company has had to take on a sizable engineering job, even to the extent of improving coal mining techniques.

One of its innovations in this direction is a snub-snouted, caterpillar-tracked "automatic" miner. Remote-controlled, the monster's cutting wheels bore into soft coal seams at a fantastic rate. It mines more than two tons of the black stuff every minute.

Aromatic Future. Hydrogenation promises to yield more aromatics per ton of coal than conventional coking methods. In addition to these familiar compounds, the process may also unearth a treasure trove of little known and used compounds for which Carbide researchers will have to dig up new applications and markets. Should they succeed, miners will have still another demonstration that for chemical companies, at least, coal is not merely a vegetable fossil but "black diamonds" after all.

Can your company use more cash?

For $25,000 or for Millions . . . get in touch with Commercial Credit

THERE ARE TIMES when even the most successful company requires added working capital to pay taxes, to meet payrolls, to modernize equipment, to carry heavier inventory or larger receivables, etc.

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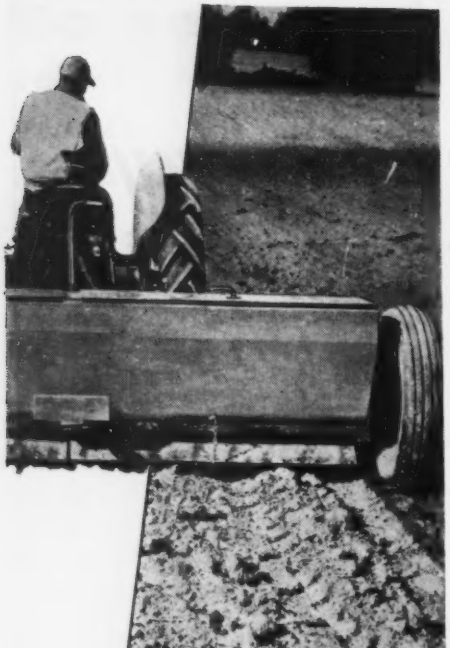

PAY DIRT

The addition of high-analysis fertilizers to the soil produces bumper results come harvest time. High-grade muriate of potash, an important component of these fertilizers, not only enriches the soil, but strengthens crop resistance to disease, producing healthier crops and larger yields.

High-grade muriate of potash produced by the United States Potash Company has the greatest K_2O content and is free-flowing and non-caking —important factors in high analysis fertilizer production.

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LABOR RELATIONS

From a Reporter's Notebook

Lawrence Stessin

Tally-Ho! Employee magazine of Dixie Mercerizing Company of Tennessee greeted spring by publishing the name, age, address, phone number and make of car of the company's five most eligible bachelors.

Employee Communications: After an accountant in TWA's Kansas City office was accidentally shut into the firm's man-size safe, a buzzer was installed inside with a card over the button reading, "If you're locked in, don't shout like—! The thing to do is ring the bell."

International Note: IBM's Paris offices are peppered with signs reading "Reflechissez!"

Mouthful: Most switchboard operators for firms with long or phonetically tricky names respond to outside calls with abbreviations or just with the firm's phone number, but the operators for Merrill Lynch, Pierce, Fenner & Beane greet callers with the whole works!

Induction? A company in Philadelphia has at its front door a guard who gives late employees a card to fill out and sign. When a young lady wandered in around 10:30 one recent morning, the guard snared her and handed her the customary card, which she studied thoughtfully for a few moments, then returned to him with "I'm not late—yet. I just came in to look for a job."

Too Efficient: Francis Repko, 26, a clerk in the Navy's Bureau of Supplies and Accounts in Cleveland, methods-improved himself out of his job. With two fellow employees, he made a study of two sections in the department and recommended elimination of seven jobs for an annual saving of $23,260. One of those jobs was his own. However, the three men won efficiency awards of $375 each and Mr. Repko was made a claim examiner for the Navy.

Executive Development: The Mayor of Dearborn, Mich., has ordered his department heads to observe a thirty-minute "think" period upon reporting for work at 8 a.m. They are to "shut themselves in their offices, take no phone calls nor see anybody."

What a Break! Employees of a company which must remain nameless are chortling over a new sign in their cafeteria, which reads "Coffee period from 9 a.m. to 10 a.m."

Temperament: The gap between men and machines is steadily shrinking. Seems that the TV color camera sulks when overworked—it ceases to reproduce accurately what it sees. The remedy is the same as for an overtired, irritable human. The technicians leave the camera alone until it recovers its good humor.

Worth Winning: Top-ranking shutterbug in Nabisco's photography contest will own a piece of the company. The first-prize-winning employee will receive a share of Nabisco stock plus enough cash to bring the total value up to $50.

Humph! A Grand Rapids businessman is running a "Look for the Silver Lining" contest among his employees. Prize goes to the one who sends in the most newspaper and magazine clippings containing cheerful and optimistic news items.

Kill That Rumor! Perhaps the most persistent and ubiquitous rumor is the one about sale to or merger with another company. Arthur J. Gavrin Press, Inc., hit by it recently, took to print to assure employees officially and emphatically that the company had not been, nor was it going to be, sold to anybody or anything; suggested that skeptical employees check with Dun & Bradstreet to clear up any doubts.

In Demand: Slump or no slump, the demand for men over forty to fill executive jobs is on the increase. The Forty-Plus Club of New York, Inc., whose membership consists of out-of-work executives over forty, has found jobs for almost 50 per cent of its members this year.

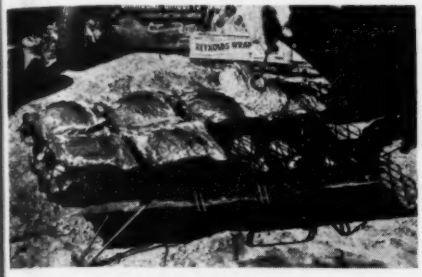
White-Collar Pay: According to the National Office Management Association, office workers' salaries have gone up an average of 50 per cent during the last seven years. The group making the smallest average gain (general typists) are doing 31 per cent better than in 1947, while private secretaries made the top average gain, 64 per cent.

Person-to-Person: Representatives of Esso's Bayway Refinery Employee Relations staff visit an employee's home on any evening of his choosing, if requested, to explain the company's benefit plans and the employee's individual stake.

NEW IDEAS

Reynolds Wrap Grill

For spring picnicking, here is a new lightweight, portable grill, with a handy carrying case, complete with everything needed for outdoor cooking except a match and food. A sheet of aluminum



foil placed underneath the floor of the grill reflects the heat upward. Included in the carrying case with the grill are charcoal briquets packed in a moisture and sift-proof foil-covered carton, a package of quick-action starter fuel, a pair of tongs, and a roll of aluminum foil (Reynolds Metals Co., 2500 S. Third St., Louisville, Ky.).

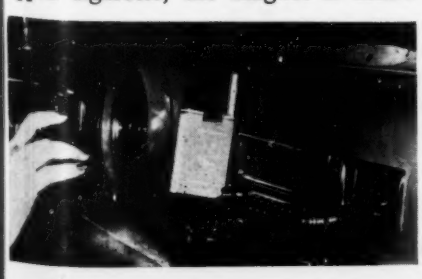
Tube Tester

This tube checker makes it possible for the owner to check his radio or television tubes himself before calling

the repairman. The tester will also check most other electrical circuits (Visulite Co., 423 Broome St., New York, N. Y.).

"Mighty Mite" Magnet

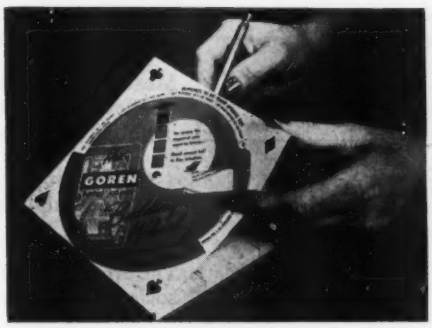
Shaped like a regular-size cork-tipped cigarette, the magnet is made



of Alnico-5, an alloy of aluminum, nickel and cobalt, and will adhere to any ferrous metal object or surface. It will hold an open pack of cigarettes within reach on the dashboard of an auto. "Mighty Mite" has many industrial and professional uses in the picking up of minute metal particles (Selectric Products Co., Dept. 85, Lynwood, Calif.).

Bidding Wheel

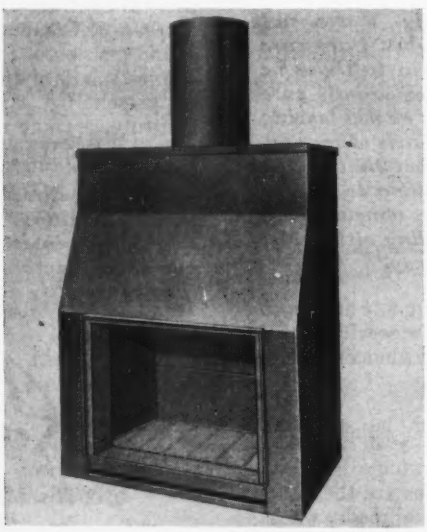
This regulation bridge scoring pad has a bidding wheel set into the top cover. It eliminates the need for a reference book since a turn of the wheel



provides quick-reference rules on Goren's point-count method, pre-emptive bids, overcalls, take-out doubles and other fine points of contract bridge (Bid-Masters, P.O. 6522, Atlanta, Ga.).

Pre-Fab Fireplace

This prefabricated, factory-built Thulman Fireplace can be fitted into any size dwelling, either new or old. It



measures 53″ x 24″ overall and has a 20″ hearth. Because of the design, no masonry is required for installation when the fireplace is used in collaboration with the same manufacturer's prefabricated chimney (Majestic Co., Inc., Huntington, Indiana).

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"MR. MURPHY DIDN'T INTEND ANY HARM"

—William White, "President of the New York Central and Director of First National Bank of New York"

Why did a railroad supplier leave 46 railroad executives tax-free bequests of $25,000 to $100,000 each?

UNDER the will of the late W. P. Murphy, probated in 1943,* some 46 railroad executives were left bequests totaling $2,000,000.

The beneficiaries included F. E. Williamson, then president of the New York Central ($100,000), Martin W. Clement, then president and now chairman of the board of the Pennsylvania ($100,000), Ralph Budd, then president of the Burlington ($50,000), W. M. Jeffers, then president of the Union Pacific ($100,000), and Fred G. Gurley, then vice president and now president of the Santa Fe ($50,000). All the bequests were tax-free.

Murphy was President of the Standard Railway Equipment Manufacturing Company, makers of patented car roofs and ends, which railroad executives required car manufacturers to buy, and he did not overlook the many years of loyal patronage by these railroad men when back in the forties he wrote his last Will and Testament.

"You have heard about Mr. Murphy's will", said Mr. William White, president of the New York Central, in a speech on March 19 after this strange testament had been disclosed by the undersigned.

Mr. White continued: ***"Fortunately, I was not remembered in Mr. Murphy's will, but I am sure Mr. Murphy didn't intend any harm to those he did remember in his will, and I am equally sure that Mr. Murphy thought that what he was leaving to those gentlemen were small amounts of money. But I would call attention to the fact that at the same time Mr. Murphy left $34 million to Northwestern University, which may be considered a fine public service. I am not defending either Mr. Murphy or his beneficiaries in any way."***

We agree with Mr. White that leaving $34 million to Northwestern University was fine public service, but if Murphy's profits were excessive, what kind of service was it to the railroad shareholders?

While Mr. White does not defend, he seems to condone.

These executives and their companies are the backbone of the Association of American Railroads, whose former president, John J. Pelley, was also remembered in the Murphy Will. The AAR is a monopoly organization whose present president, William T. Faricy, has come out publicly in support of Mr. White and the New York Central banker-directors against the Alleghany-Young-Kirby nominees in the present proxy fight.

Most of the 130 railroads, even at this late day, use outmoded refrigerator cars which drip brine and must be shunted to sidings to be loaded down with ice and salt. They still use the ancient waste-packed journal box on freight cars when modern bearings such as automobiles enjoy would eliminate the dangerous hot box forever.

The American public should ask Mr. White and the Association of American Railroads these questions:

Is the slowness of progress in modernizing railroad equipment due to honest differences of opinion among railroad men?

Is it due to anti-competitive agreements?

Or is it due to extraordinary rewards for railroad executives such as described above?

That such rewards can take other forms than the Murphy Will is illustrated in the case of Gustav Metzman, former president of the New York Central, who now has a lifetime contract at $25,000 a year. This Central contract of Mr. Metzman, a director of J. P. Morgan & Company, is over and above his full and liberal pension of $26,000 a year, to say nothing of the strange salary of $60,000 a year he is said to receive at his present age 68 from the American Railway Car Institute, a trade association of car builders who sell equipment to the railroads, including the Central.

If banker-directors do not insist upon competition in banking, how can railroad presidents be expected to insist upon competition among suppliers, contractors and concessionaires with whom they constantly deal.

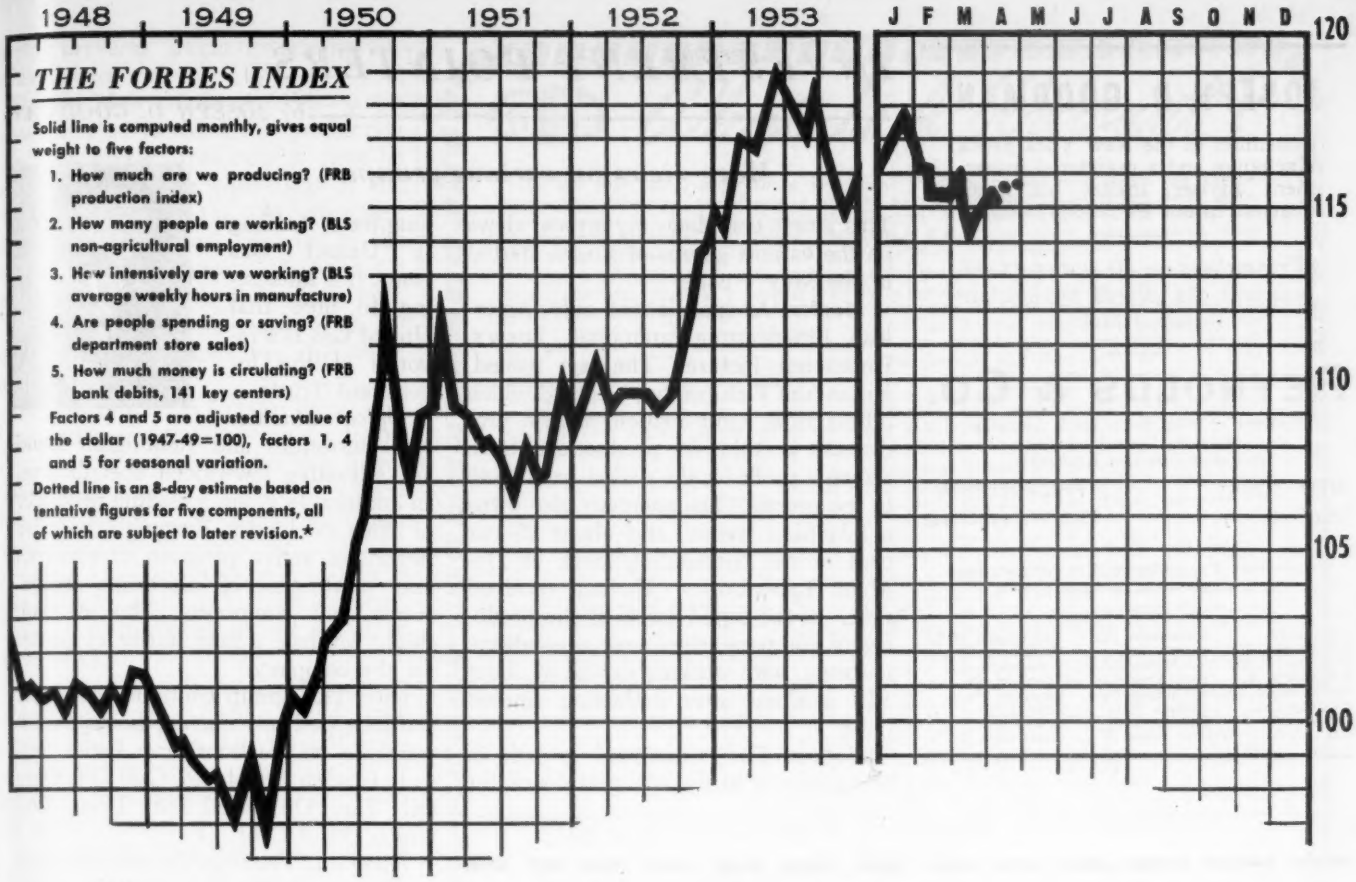
Robert R. Young

The Alleghany-Young-Kirby Ownership Board

Owners of More Than 1,000,000 Shares of New York Central

4500 Chrysler Building, New York 17, N. Y.

*Probate Court of Lake County, Illinois


1948
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J F M A M J J A S O N D
120
115
110
105
100
THE FORBES INDEX
Solid line is computed monthly, gives equal weight to five factors:
1. How much are we producing? (FRB production index)
2. How many people are working? (BLS non-agricultural employment)
3. How intensively are we working? (BLS average weekly hours in manufacture)
4. Are people spending or saving? (FRB department store sales)
5. How much money is circulating? (FRB bank debits, 141 key centers)
Factors 4 and 5 are adjusted for value of the dollar (1947-49=100), factors 1, 4 and 5 for seasonal variation.
Dotted line is an 8-day estimate based on tentative figures for five components, all of which are subject to later revision.*

FORECAST

by B. C. FORBES

U. S. growth moves westward

CIVILIZATION, growth, prosperity have historically moved Westward through the ages.

So has it been and is in the United States.

Those of us who live in New York City have been prone to regard the metropolis as exercising financial leadership, national leadership.

This is no longer the fact.

The biggest bank the world has ever known is now located on our Western Coast.

New York used to have almost a monopoly of billion-dollar enterprises. Not now. More billion-dollar organizations are today located outside of New York than in it.

Of today's 22 billion-dollar banks, less than half (10) are centered in New York. Chicago has two, as has California, while others are now headquartered in Pittsburgh, Detroit, Boston, elsewhere.

The East still claims most of our towering life insurance companies, headed by Metropolitan Life, the most gigantic business enterprise in the world, with assets of well over $12,000,000,000. Of our 68 concerns having assets of $1,000,000,000 or more, life insurance companies constitute 15.

The East leads with our two most gigantic oil companies, Standard Oil of New Jersey and Socony-Vacuum, but the rest of the country has considerably more.

Ditto railroads. Next to the Pennsylvania and New York Central, are Southern Pacific, Santa Fe and Union Pacific.

New York, indeed the whole East, does not figure among America's foremost motor companies, namely, General Motors, Ford.

Neither of our $2 billion electric concerns, General Electric, Westinghouse, belong to New York City.

The world's two largest steel companies, United States Steel and Bethlehem, have their main plants elsewhere.

The mammoth Bell Telephone System, second to Metropolitan Life as our most mountainous enterprise (with assets of almost $12,000,000,000) has its headquarters in New York, but the next ranking utility is Pacific Gas & Electric, while Chicago's Commonwealth Edison comes next to New York's Consolidated Edison.

Two of our other billion-dollar corporations, du Pont and Sears, Roebuck, are located in Delaware and Chicago.

Our largest finance company, GM Acceptance, does not belong to New York; our next two, CIT Financial, Commercial Credit, are located in New York and Baltimore, respectively.

In 1929 only 20 business organizations had assets of $1,000,000,000 or more, the United Press points out, against 68 today.

In view of all this most impressive record of America's growth, why should we become pessimistic? I cannot.

*Final figures for the five components (1947-49=100)

	Mar. '53	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Production	130.3	130.8	130.3	130.3	125.9	127.6	125.4	124.9	130.0	127.0	125.0	124.0	**123.0**
Employment	109.0	111.7	112.1	113.0	112.6	113.0	113.5	113.5	112.8	113.7	109.4	108.5	**108.2**
Hours	103.2	102.3	101.8	102.0	101.3	101.5	101.5	101.0	100.3	100.8	98.7	99.2	**98.7**
Sales	108.0	102.3	109.8	109.0	107.3	106.3	100.6	104.3	106.1	107.2	102.9	104.1	**102.1**
Bank Debits	135.3	140.0	136.1	138.9	142.5	131.2	137.3	122.4	136.5	138.0	140.3	145.0	**150.0**

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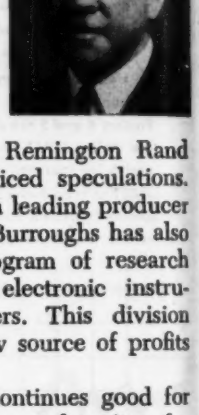
INVESTMENT POINTERS

by JOSEPH D. GOODMAN

More views on various groups



THIS article completes my *present* views on the various groups of stocks, started in the May 1 issue:

Movies: As speculations only, American Broadcasting-Paramount, Loew's, Paramount Pictures. The last named, Paramount Pictures, has a record which differs from most motion picture producers, in that its productions have shown a profit for the period from 1940 to the present. The company also owns a television station, and about 25 per cent of the outstanding stock of DuMont Laboratories. Having received much of the liquid assets of the predecessor company, the financial condition is strong, with working capital of about $19 a share after deducting funded debt.

Natural Gas: Continued growth in this group is likely. My preference for long-term holding is United Gas Corp. It is interesting to note that United Gas is a favorite of the Investment Trusts.

Office Machinery: Burroughs and Remington Rand are attractive low-priced speculations. In addition to being a leading producer of office machinery, Burroughs has also begun an active program of research and production of electronic instruments and computers. This division might produce a new source of profits for the company.

Oils: This group continues good for the long pull; my current favorites, for purchase on reactions, are: Cities Service, Cosden Petroleum, Gulf Oil, Ohio Oil, Pure Oil, Shell Oil, Texas Co., Union Oil of Calif.

Paper and Printing: Current favorites are Brown & Bigelow, and St. Regis Paper. The former stock has been around 12 to 13 for a long while, and although earnings have declined in the last year, the $1 dividend is well covered. St. Regis' sales were at an all-time high in 1953, with earnings of $2.91 a share. Further gains in sales and earnings are expected, with a possible increase in dividend.

Rails: These stocks have been unpopular for quite some time, particularly since carloadings and earnings have been declining. However, I believe leading rail stocks can again be considered for purchase, and recommend at this time: Atchison, Atlantic Coast Line, Rock Island, Great Northern pfd., Northern Pacific, Seaboard Air Line, and Texas & Pacific, and Gulf, Mobile & Ohio; also, St. Louis-San Francisco among the low-priced rails.

Rail Equipment: Pullman, because its "other" divisions should do well.

Rubbers: The only company in this group that I currently favor is Lee Rubber. It is one of the medium-sized companies in this field, being well diversified, and exceptionally strong financially. Working capital amounts to $60 per share. There are but 278,398 shares of common stock, with no funded debt or preferred stock. Earnings for the last five years have averaged slightly over $7.50 per share. The 1953 dividend amounted to $4 plus 5% in stock.

Shipping: In this group I favor W. R. Grace, details of which were given

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in my previous article under the *Finance* group.

Steels: Most stocks in this group have adjusted to the lower production rate. The present 69% rate, it must be remembered, is the equivalent of the 102% rate based on the 1947-49 index, showing an increased capacity in the last six years of almost 41%—from 1.6 million tons weekly to 2.2 million tons. Current favorites among the steels include Bethlehem, Crucible, Republic, and U. S. Steel.

Sugars: American Crystal Sugar and American Sugar Refining are my favorites. The former is very strong financially, with working capital of almost $20 per share. The social unrest in the foreign sugar-producing countries, including our own possession of Puerto Rico, would seem to warrant a "wait-and-see" attitude in regard to other sugar stocks.

Textiles: The only stock in this group which I favor is Pacific Mills, now around 23-24. There is no funded debt; working capital amounts to around $38 per share. Earnings in 1953 were $2.53 per share.

Tobacco: I think that most of the stocks in this group are attractive, with Reynolds my special favorite.

Utilities: The leading utilities should be especially helped if, as expected, Congress soon enacts legislation to reduce double taxation of dividends. In the absence of the outbreak of a World War, and with present *very low* money rates, certainly American Telephone would not be too high even at 180, where the yield would be 5%. My favorites: American & Foreign Power, American Tel. & Tel., International Tel. & Tel., Consolidated Edison, Pennsylvania Power & Light, Philadelphia Electric, and West Penn Electric. I think there is a good chance of the dividend payments on the last named being increased.

Miscellaneous: Among other stocks which I favor, not easily classifiable into any of the previous groups, are: Carborundum, Colgate-Palmolive, Seeger Refrigerator, and S. S. White Dental. Carborundum (a Mellon company), and Seeger Refrigerator, both previously recommended here, should do well over the long term.

Advance release by air mail of this regular article will be sent to interested readers on the day of its writing. Rates on request.

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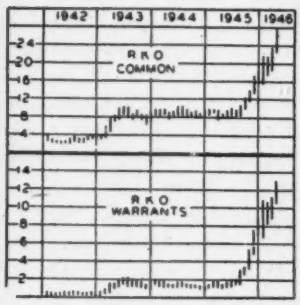
RHM

What Is A Warrant?

In the first place, why should you care? Well, warrants have shown far greater appreciation than any other type of stock in past markets and probably will do so again. For example, in the past decade, the common stock warrants of Atlas Corp., Tri-Continental, Richfield Oil, United Corp., and R.K.O., to name some, showed $500 investments appreciating to as much as $100,000 in a few years!

What is a warrant? A warrant is issued by the company itself giving you the right to buy company stock at a certain price for a specified period of time, which may be 1 year, 5 years, 10 years or with no limit at all, some warrants being perpetual (such as Tri-Continental). To see how much warrants can become very valuable look at the R.K.O. chart. In 1940 R.K.O. reorganized and warrants were issued which gave the right to buy R.K.O. common stock at $15 per share at any time up to 1947. In 1942 R.K.O. common stock was selling around $2.50 and with general pessimism rife, the warrants were selling on the N. Y. Curb for 6¼ cents. Obviously, few expected R.K.O. to sell above $15, where the warrants would begin to have actual value. How the picture changed in 4 years! As we see in the chart, R.K.O. common advanced to $28 and the warrant, being the right to buy at $15, was selling at $13.



Why is a warrant so unique a vehicle for appreciation? When R.K.O. common went from $2.50 to $28, a $500 investment went to $5,625. When R.K.O. warrants went from 6¼¢ to $13, the same $500 investment went to $104,000. The warrant appreciated 20 times as much as the common!

What about warrants in this market—today? There are many long-term and perpetual warrants from past years, and 1952 saw many new warrants appear, particularly in Canada, where speculative oil and base metal companies have issued warrants.

Every investor interested in capital appreciation should know that opportunities exist in warrants. He should know why warrants are issued, exactly what they are, how they may be profitably bought and sold, and what warrants trade in today's market. He must study all of this carefully because in the hands of the uninformed, warrants hold at least as much danger as promise. If *you* are interested in capital appreciation, the best $2 investment you can make is in purchasing a copy of:

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By Sidney Fried

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MARKET COMMENT

by LUCIEN O. HOOPER

How high are stocks?

A NEWSPAPER headline says, "STOCKS HIGHEST SINCE 1929." It refers to the fact that on April 30 the D-J *Industrials*, the most widely used index of stock prices, sold above 321 for the first time since October 23 of that famous year. The reader is shocked. He says, "I didn't know stocks were so high! This is dangerous!"

But let's take a look at those D-J *Industrials*. The average includes about the same stocks it did in 1929 (there have been a few minor substitutions), and allowances have been made for split-ups and larger stock dividends so as to make the published price represent as constant a thing as possible. *But the stocks themselves* are worth more than in 1929 because they have back of them more book value, more earning power and more dividend income. Here's why:

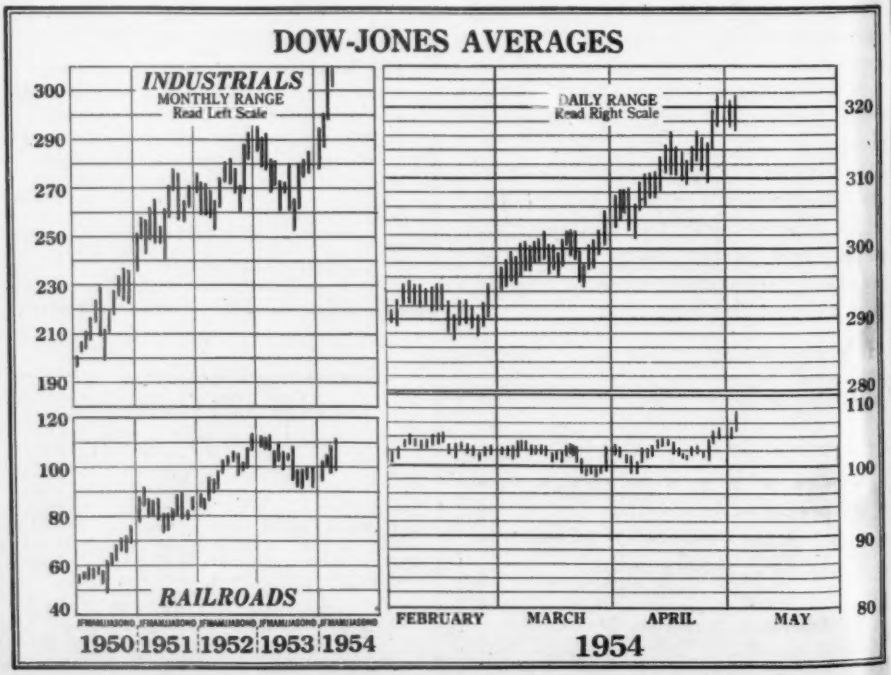
In 1929, the D-J *Industrials* (a composite "share") earned $19.31 a share. In 1953 the same composite "share" earned $27.46. *Taking a price of 321, a dollar's worth of earnings cost $16.62 in 1929 and only $11.68 in 1954.*

In 1929, the dividends on the Dow were $7.06 a share. In 1953, dividends on the Dow were $15.52 a share—more than twice as much. A dollar's worth of dividends in 1929, with the average at 321, cost $45.46. A dollar's worth of dividends in 1954, with the average at 321, costs $20.62. *Thus dividend income, when bought in D-J quality stocks, costs just about 45% as much as it did in 1929.*

In 1929, the book value of the composite Dow share was $112.19 on December 31. As nearly as can be estimated, figures are not quite complete, the book value of a composite share of the Dow at the end of 1953 was about $225. *So you get just about twice as much book value.* And the book value you get in 1954 is a lot more "solid" than the book value you got in 1929. *Few, if any, corporations could be reproduced today for their stated book value. In 1929 most of them could have been reproduced, at least in theory, for less than their book value.*

So don't get excited when you hear people say that stocks "are selling at 1929 prices." Perhaps they are, but most of the "big stocks" are much more valuable equities. They mean ownership in bigger and better companies, operating in a bigger and less risky economy, and they are more conservatively capitalized.

Let's carry this a little further. In 1928 the number of shares traded on the NYSE was about 128% of the number of shares listed, and in 1929 turnover was about 119% of the number of shares listed. In 1953 turnover was only about 13%, and in the first four months of this year turnover was at the annual rate of only about 14% of the number of shares listed. In other words, speculation is about one-ninth



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as active as in 1928 and about one-eighth as active as in 1929.

Again, brokers' loans today are equal to less than 1% of the total market value of listed shares. In 1929 brokers' loans were equal to about 10¾% of the total market value of listed shares.

The present situation in the stock market, then, is entirely different from what it was in 1929: (1) Values are close to 100% better now than they were then; (2) speculation is about 12% as active, and (3) brokers' loans (values considered) are about 12% to 15% as high. So don't let anyone tell you this is "another 1929"!

But for all of this, I am less enthusiastic about adding to holdings with the D-J *Industrials* at around 320 (or higher) than I was with the average at 280 or 300. It seems to me that the rise from 254 to 321 (as this is written) is entitled to some consolidation. This intermediate advance has already added 26%, and that's quite a lot. Furthermore, it is now about eight months old.

How much of a recession? In the preceding issue I suggested that an orthodox drop from an assumed 325 top (that was just a guess) would be to 292.50 if it amounted to 10%. I am beginning to think that the drop won't be as large as 10%, especially if it starts from somewhere in the 320-330 area. If it starts from a higher level than that, it might reach or even exceed 10%. *It would be better to have a setback now than to have it later—after a further rise.*

I am not recommending any extensive profit-taking except in the *Aircraft Shares,* which I regard as overvalued. *For the real investor, I would recommend holding fast to good positions; but I would suggest "going easy" for the time being on new purchases.* Perhaps I am too cautious, but I must write as I feel. I just think we will have better opportunities to spend *new money* some time between now and July 1.

Just to be inconsistent, I would like to mention *Northrop Aircraft,* now selling around 24. It is speculative, even for an aircraft stock. It is selling at a higher price-earnings ratio than the shares of most better companies. It will earn only about $4.50 a share for the year to end July 31. But Northrop has a new fighter plane for which it has good orders, and the chances are that earnings for the year to end July 31, 1955 will be very substantially better. On weakness, the stock might be picked up as a radical speculation. Probably there is no hurry.

At the annual meeting of *Transamerica* (32) it was reported that the

company's subsidiaries earned an estimated $8.1 million in the first quarter of 1954 against $4.9 million in the same period a year ago and predicted that the company would have "a marvelous year in 1954." Incidentally, it was called to the attention of shareowners that Occidental Life now has over $4¾ billion of insurance in force against about $150 million when Transamerica acquired the company in 1930. Those who bought this stock at the suggestion of this column should keep it.

Pullman, Inc. earned $1.91 a share in the first quarter against $1.24 a share in the first quarter a year ago, but the company will do well if it shows more than $5 a share for the full year. The $3 dividend rate looks "safe" and the extra of $1 probably will be paid, too. That would mean a return of almost 8% on the stock at 51. For those who want a high return, this stock and *United Fruit* (52) continue to appeal to me.

Columbia Broadcasting System (51) is one of the few growth stocks I would not hesitate to buy at this time. . . . The excellent first-quarter earnings of the *Machine Tool Companies* should not be regarded as a measure of what is to be expected in subsequent quarters. I would cut back holdings in this group, *and cut them back sharply* in spite of the high dividend yields and apparently low price-earnings ratios. . . . The *U. S. Rubber* (32½) report for the first quarter shows what a soft cushion the end of the EPT gives some companies. Sales were off from $226 million to $190 million, and pretax net from $26½ million to $17⅞ million. Yet, because taxes were down from almost $19 million to $9.8 million, the company was able to earn $1.18 a share on its stock for the period, against $1.10 a share in the same quarter a year ago. . . . *Borg Warner* (83) is one of the companies which should do better in the second quarter than in the first. . . . *American Seating* (26) should have a most excellent third quarter, and the stock looks interesting whenever available on setbacks. . . . *Clark Equipment* (38) expects to earn more in the second quarter than in the first quarter, for which a net of $1.09 a share was reported. . . . The *Oil Shares* continue to act better than the other major groups. *Pure Oil, Amerada, Standard Oil of New Jersey* and *Phillips Petroleum* are among my favorites.

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STOCK ANALYSIS

by ***HEINZ H. BIEL***

Stop, look and listen!

THE stock market has been going up, almost without interruption, since mid-September of last year. Because the market has remained so highly selective, with hundreds of stocks barely participating in the advance and scores of stocks making new lows week after week, the true extent of the rise is not readily apparent. The Dow-Jones industrial stock average with a 25% gain up to the end of last month doesn't tell the full story. When high-grade investment stocks like *Socony-Vacuum, International Paper* and *Inland Steel* jump 50% in a little more than seven months, not to mention the fabulous performance of *General Electric* and *Westinghouse* or *specialties* like *Vanadium, Tennessee Corporation, Lily-Tulip Cup* or *Outboard Marine,* then we better take time out and see where we stand.

Much as I enjoy the pleasant atmosphere that goes hand in hand with rising security prices, I must confess that I don't like to see the market go that fast. Whenever it begins to look so easy to make money in the stock market, too many people will buy stocks to pick up a few quick points rather than to make a sound long-term investment. They become speculators who look at prices, not investors who look at values. This creates a potentially dangerous situation where sudden and increasingly severe shakeouts have to be expected and where the inexperienced is likely to get his fingers burned.

I don't think that stock prices in general are too high already, but it cannot be denied that many stocks are discounting quite liberally the expected promising future. The new *General Electric* stock, for example, now is yielding less than 4% even on basis of anticipated $1.60 dividend rate which, in turn, represents a 20% increase over the dividend paid last year. I'm convinced that *General Electric* will continue to enjoy outstanding growth in sales and profits and I wouldn't think of eliminating the stock from true investment accounts, but buyers of the stock at today's prices should have no illusion that they are getting a bargain with the company's stock valued at well over $3½ billion!

Many first-quarter earnings reports are tremendously impressive. They confirm our often expressed opinion that efficient and well managed companies can earn most satisfactory profits even when not operating anywhere near full capacity. Realization of this fact is the basic cause of the rise in stock prices; it is also the reason for the market's extreme selectivity.

Good investment values are beginning to get rather scarce. Mostly they can be found in stocks which for one reason or another are not among the favorites of the institutional investor. Once again I wish to draw attention to *Royal Dutch Petroleum* (42), one of the world's largest corporations and similar in many respects to *Standard Oil* (*N. J.*). The great majority of institutional investors have ignored *Royal Dutch* for two reasons: (1) it is a foreign (Dutch) corporation; (2) it is not listed on an American exchange.

The company's management has been as able, conservative and successful as that of the best American oil company. While *Royal Dutch* has important interests in Europe and other parts of the world, more than 70% of its crude oil production and 60% of its refinery runs are in the Western Hemisphere. Its interest in the American Shell Oil Co. plus its working capital alone approximately equal the present price of the stock. With consolidated earnings of over $7 a share last year, *Royal Dutch* is selling at less than six times earnings; *Standard Oil* (*N. J.*) sells at almost ten times 1953 earnings of $9.13 a share.

Royal Dutch Petroleum is expected to be listed on the New York Stock Exchange this year which will remove one major obstacle now standing in the way of more general investment appeal. While cash dividends will total only about $1.40 a share, a stock dividend of 20% has been proposed.

Earnings of *Mathieson Chemical* (45) have made little progress in the past several years while the company was digesting its rapid expansion, including the acquisition of *Squibb.* This most aggressively managed company seems ready to resume its earnings growth and new commitments on a semi-investment basis seem fully warranted. With earnings likely to approximate, if not exceed the previous peak of $3.56 a share in 1951, the $2 dividend rate is amply protected. The stock is still selling some 10% under its old high of 49¾.

Interesting developments have added a new spark to *American Potash & Chemical Corp.* whose record over the last ten to fifteen years had not been particularly inspiring. A few months

ago the company, jointly with *The American Metal Co.* and *Selection Trust, Ltd.*, a British mining concern, obtained one of the world's largest and low-cost high-grade lithium-beryllium deposits in Southern Rhodesia which holds promise of considerable importance in atomic energy and other fields. Substantial improvements in the efficiency of its potash operations also have brightened the earnings outlook.

With only about 431,000 common shares outstanding, which are preceded by $9,160,000 of preferred stock and $3,081,000 of long-term debt, the common stock has considerable leverage. While this detracts from the investment rating of a stock, it does add to its speculative attraction so long as the earnings trend is pointing upwards. This year's net income should compare favorably with 1953 profits of $4.01 a share, but an increase in the present $2 dividend rate, which has been in effect for the last 4½ years, is not imminent. Assuming no major change in general business conditions, *American Potash* may earn around $6 a share within a couple of years, and on that basis the stock, at 44, has interesting possibilities. The Class "B" stock is listed on the New York Stock Exchange; the "A" stock, practically identical but inactive on the American Exchange, should be avoided because of its limited market, unless it can be bought substantially below the price of the "B" stock.

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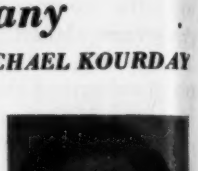
The Closed-End Investment Company

by MICHAEL KOURDAY



In recent years, a lot of market interest has been shown in the mutual fund (or open-end) type of investment company. Not quite as much attention has been paid to its very close relative: the closed-end company. To some extent, this has been due to the more aggressive promotion of mutual funds. The fact that closed-end companies are a bit more complex may also have contributed to their neglect. The net result appears to be that the closed-end company has been relegated to a minor role in the portfolio planning of the average investor. This means that many individuals are by-passing an opportunity to participate in a very worthwhile investment area . . . one with particular appeal for the buyer of limited means. Perhaps the following notes will help shed a little more light on this interesting subject.

A study of the *structure* of this type of financial organization is most revealing. To begin with, the closed-end investment company is a financial institution whose sole activity is to invest the money of many individuals. In this respect it resembles its opposite number, the open-end company. The structural point on which these two companies differ, however, is that of *capitalization*. In the case of the mutual fund, the total number of shares outstanding increases or decreases as shares are purchased or redeemed from the issuing company. In the closed-end company, the number of shares outstanding are fixed (thus the term "closed-end"), and prospective buyers can only obtain shares from prospective sellers. Furthermore, a number of closed-end companies have been financed with senior capital (bank loans, bonds or preferred stock), while in the mutual fund this feature is almost nonexistent.

This structural difference in capitalization results in a difference in the method by which *prices* are determined for shares of these companies. In the open-end company, the price to be paid for its shares is always based upon net asset value (the value of the total net assets divided by the number of shares outstanding). With the closed-end company, the price paid is determined by the forces of supply and demand, and although the asset value per share has an important bearing on the price, other factors will also be influential.

Putting aside the topic of structure, it is interesting to note that the closed-end company resembles the mutual in offering several highly important features such as: diversification, top management and tax benefits.

So much has been written about *diversification* that little need be added here except for a reminder that this important factor may be achieved in a number of ways. Among the better known closed-end companies, for instance, it will be seen that National Aviation prefers companies in the aviation field; Atlas Corp. is well known for its interest in special situations, while Adams Express holds a broad list of securities. In effect, these variations of the diversification factor afford the investor the opportunity of finding almost any type of grouping which appeals to him.

It is pretty well established that most closed-end companies offer first-rate *management*, since it is a common practice to maintain highly-skilled personnel whose sole function is the selection of securities. Interestingly enough, some of the same managers of mutual funds also serve as the investment managers of some closed-end companies. It should be realized, of course, that different managements get different results. Among those closed-end companies which are often looked upon as having above-average managements are: Lehman Corp., General American Investors, Atlas Corp., and Consolidated Investment Trust.

Also advantageous are the *tax benefits* which are often possible. Since some of the investment company's income is often comprised of capital gains, the receipt of such income to the individual is taxed at capital gain rates (subject to a maximum tax of 25%). A few of the closed-end companies who have appeared to stress capital gains are: Lehman Corp., General American Investors, U.S. & Foreign Securities, National Aviation, National Shares and American International Corp., to mention a few.

Aside from these three important characteristics which it shares with the mutual fund, the closed-end investment company offers several additional interesting features. These are the very vital factors of leverage and discount.

To the investor with speculative inclination, the feature of *leverage* found in some closed-end companies offers good appreciation possibilities. This characteristic is well known to most of us, although the term is seldom used

outside of the investment field. The businessman, for instance, obtains leverage from a bank loan . . . the investor from buying on margin.

Leverage occurs in investment companies which have been capitalized through the use of bank loans, bonds, preferred shares, or any combination thereof. The idea, of course, is to try to earn more on the borrowed funds than these funds will cost. Furthermore, since all that the senior capital can claim is its par or redemption value, any increase in the net assets of an investment company after this point would accrue fully to the common stock. Leverage, therefore, provides the investor with someone else's money as additional working capital. Naturally this feature will magnify profits, intensify losses.

While a number of investment companies have some senior equity in their capitalization, the following have a significant amount: Tri-Continental, Central-Illinois Securities, Alleghany Corp., Equity Corp., Pacific American Investors and U.S. & International Securities.

Discount. One of the unusual features of the closed-end company is that most shares can be bought at a lower cost than the per share asset value (except in cases of an above-average record). The size of the discount is determined by many factors, such as the company's record, capitalization, management and portfolio policies. While the investor should not buy an investment company merely for the discount, its presence can result in improving profit possibilities.

For one thing, the discount can also provide a degree of leverage. For example, Niagara Share, whose sole capitalization is represented by common stock, has, in effect, about $1.40 of assets working for every dollar of market price. Furthermore, as the discount narrows, additional leverage is provided. In the case of General American Investors, for instance, the price now being paid—which approximates net asset value—once represented a substantial discount (at year-end 1950 –7%, 1947–25%, and 1941–42%).

Because discounts vary widely among individual companies, there is no possible way to buy one issue with a high discount on the premise that it will narrow to the amount obtained on other issues. Furthermore, it will usually be found that the larger the discount, the greater will be the amount of risk which the investor will have to assume. In this connection, the following companies whose shares sell at an unusually high discount, are also among the speculative closed-end companies: Equity Corp. (52%), Tri-Continental (42%), Central-Illinois (39%), U.S. & International (31%) and Niagara Share (30%).

With all these interesting features, the closed-end company certainly seems to merit the attention of all serious-minded market participants.

Following are a few which have particular appeal: Tri-Continental, as a high leverage stock for capital appreciation; Carriers & General, for income purposes; Atlas Corp., because of its fine management; General American Investors, in view of its ability to pay large capital gains, and Niagara Share, because of the attractive discount on a well-diversified portfolio.

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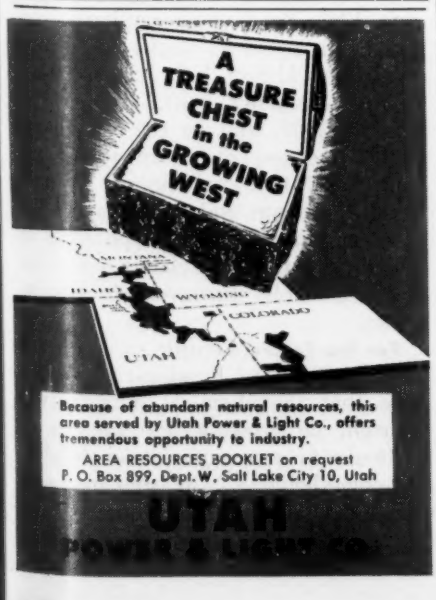
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THE FUNDS

SPECIALISTS IN CHEMICALS

"Research is the most important part of a chemical company." That statement came last week from Ferdinand Eberstadt. And he should know. Eberstadt is the founder and president of 16-year-old Chemical Fund, Inc., whose $63.2 million net assets are invested in the common stocks of 51 chemical companies (plus $1.5 million in short-term notes and Treasury Bills). Chemical Fund's dollar investments vary from $162,750 in Owens-Corning Fiberglas Corp. to $3.5 million in du Pont; in number of shares its holdings vary from 2,300 shares of Haloid Company to 74,500 of Dow Chemical.

But whatever the size, Chemical Fund's investment is based mainly on the company's research efforts. In 1953 alone the companies represented in Chemical Fund's portfolio spent $310 million on research. This was 3% of their total sales, or 15% of their net before taxes. Such emphasis on research, Eberstadt points out, has led Minnesota Mining to increase its earnings 1,089% since 1929, Pfizer 810%, Abbott Labs 710%, Monsanto 642%, and Dow Chemical 587%. But he is equally quick to point out that, for the investor, another kind of research is equally necessary: research by the fund's investment managers. Thus Chemical Fund boasts its own elaborate research department and in addition counts on Arthur D. Little, Inc., the nation's oldest chemical engineering consulting firm, to advise it on what is happening where. Appropriately enough Chemical Fund sold its holdings of American Viscose and Celanese a couple of years ago, before the big break in textile stocks. It also unloaded $5 million of antibiotic stocks in 1951, but still has some left.

Early Bird. Although Eberstadt, 63, today bosses Chemical Fund, he is no chemist. In fact, he originally planned on a career in the law, in 1923 became a partner in a law firm. In 1931 he opened the doors of his own underwriting and investment banking firm, F. Eberstadt & Co. Until the mid-30s he had no particular interest in chemicals. Then his firm underwrote Victor Chemical Co. and that changed everything. In studying Victor Chemical, Eberstadt became engrossed with the whole industry. "We discovered that it was difficult to find an unprofitable year or a dividend omission in the whole industry, there were practically no strikes and chemicals fared the same in peace and war."

For Eberstadt this was enough. In July, 1938, after nine months of study, Chemical Fund was launched with net assets of only $100,000. As Eberstadt laughingly put it: "Those were the days when mutual funds were held in a high measure of disrepute, but we had the courage of ignorance."

But Chemical Fund's president did not ignore the industry's disrepute. He formulated such exacting policies for his new fund that it was one of the few funds that were not forced to make any changes in 1940 when the Investment Act was passed.

He soon discovered that in chemicals he had picked a winner. It is the nation's fastest-growing industry and the only one which serves all of the U.S. Department of Commerce's 72 industry groups. It is essentially non-cyclical. Eberstadt likes to illustrate this point by showing that in 1933, dividends on the stocks now held by Chemical Fund fell only 39%, against 58% for the whole Dow-Jones Industrial list.

Growth & Patience. But while Eberstadt speaks glowingly of the importance of the whole industry, he naturally feels it is no place for the unknowing investor. There are, for instance, tremendous differences in company performance. While Minnesota Mining has increased its per share earnings more than 1,000% since 1929, Commercial Solvents' earnings dropped 31%. Moreover, the industry is a difficult one to follow intelligently. As affable Eberstadt smilingly explains: "It's easy to know what General Motors makes, but it takes an expert to know what the chemical terms mean, what the product can do." Experts are what Chemical Fundmen claim to be, and they base their claim on the record. While the Fund's emphasis is on growth, many of its stocks pay sizable dividends. Abbott Lab has increased its cash dividends 1,900% since 1929, Pfizer 1,289%, and in the more than 1,000% increase class are such companies as Minnesota Mining, National Lead, Monsanto and Scott Paper. But Chemical Fund's major emphasis is on growth, and the fund claims one of the lowest portfolio turnovers in the industry.

For the Future. Despite so much past growth, Chemical Fund executives believe that the chemical industry will go right on growing—and rapidly. In particular favor are companies developing polyethelyene (a plastics material) and epoxy resins. While synthetic fibers have suffered a temporary setback, Fund experts believe that their future

looks good. As one Chemical Fund officer remarks: "There is yet to be developed a material which is equally useful all year round."

For still longer-term possibilities, Fundsmen look to the companies in the fields of coal hydrogenation and synthetic rubber—the latter's importance to come to the fore when the plants are back in private hands. But for right now and the future, Eberstadt believes that every investor should put about 20% of his funds in chemical stocks—preferably through Chemical Fund.

CHEMICALS GLOSSARY

ALTHOUGH the chemical industry pervades each of the 72 industry groups of the American economy, and has grown to an estimated 15% (through its processing industries) of U.S. total output of goods and services, the average American often knows very little of the jargon of the industry. This is because he (1) has only recently come to realize its full importance; (2) has little to do in daily life with "chemicals" as such, but rather with the end-products whose chemical composition is not obvious or important to him; and (3) must admit, with some embarrassment, that too many years separate him from his schooldays chemistry homework. Here FORBES presents a well-abbreviated glossary of some of the commonest words in chemical terminology:

AGRICULTURAL CHEMICALS are the nitrates, the phosphates, potash and synthetic chemicals marketed to agriculture for (1) fertilizing or conditioning the soil, or (2) killing weeds, insects, fungi, rodent pests, etc.

BASIC CHEMICALS are acids, alkalis, salts and other tonnage chemicals, so-called because they are sold in raw, bulk form.

FINE CHEMICALS, such as flavorings, medicines, dyes and some reagents, are intricately compounded, made to grade, high-unit-priced and small-volumed.

HEAVY CHEMICALS are the opposite of fine chemicals, providing low-unit profits and necessitating large volume; they consist of the basic chemicals and other tonnage chemicals used as intermediates.

INTERMEDIATES are "building-block" chemicals, upgraded in combination with other chemicals to form a new product.

ORGANIC CHEMICALS are those which contain carbon, include especially the coal- and petroleum-derivatives and those made from agricultural materials.

INORGANIC CHEMICALS are those which do not contain carbon.

PETROCHEMICALS are all chemical compounds recovered from petroleum or natural gas or derived wholly or

TEXACO

THE TEXAS COMPANY

—207th—

Consecutive Dividend

A regular quarterly dividend of seventy-five cents (75¢) per share on the Capital Stock of the Company has been declared this day, payable on June 10, 1954, to stockholders of record at the close of business on May 7, 1954.

The stock transfer books will remain open.

ROBERT FISHER
Treasurer

April 27, 1954

Allied Chemical

Quarterly dividend No. 133 of Seventy-five Cents ($.75) per share has been declared on the Common Stock of Allied Chemical & Dye Corporation, payable June 10, 1954 to stockholders of record at the close of business May 14, 1954.

W. C. KING, *Secretary*

April 27, 1954.

SOCONY–VACUUM OIL COMPANY
INCORPORATED

Dividend No. 173 — April 27, 1954

The Board of Directors today declared a quarterly dividend of 50¢ per share on the outstanding capital stock of this Company, payable June 10, 1954, to stockholders of record at the close of business May 7, 1954.

W. D. BICKHAM, *Secretary*

CLARK EQUIPMENT

Dividend Notice

The Board of Directors of the Clark Equipment Company today declared the following dividends:

Common Stock—A quarterly dividend of 75 cents per share, payable June 10, 1954, to shareholders of record at the close of business May 26, 1954.

Preferred Stock—The regular quarterly dividend of $1.25 per share payable June 15, 1954, to shareholders of record at the close of business May 26, 1954.

G. E. ARNOLD
Secretary

April 30, 1954

SOUTHERN NATURAL GAS COMPANY

Birmingham, Alabama

Common Stock Dividend No. 61

A dividend of 40 cents per share has been declared on the Common Stock of Southern Natural Gas Company, payable June 12, 1954 to stockholders of record at the close of business on June 1, 1954.

H. D. McHENRY,
Vice President and Secretary.

Dated: April 24, 1954.

DIVIDEND NOTICE

SKELLY OIL COMPANY

SKELLY

The Board of Directors today declared a quarterly cash dividend of 40 cents per share on the common stock of the Company, payable June 4, 1954, to stockholders of record at close of business April 28, 1954.

April 13, 1954

C. L. SWIM,
Secretary

CITIES SERVICE COMPANY

Dividend Notice

The Board of Directors of Cities Service Company has declared a quarterly dividend of one dollar ($1.00) per share on its $10 par value Common stock, payable June 7, 1954, to stockholders of record at the close of business May 13, 1954.

ERLE G. CHRISTIAN, *Secretary*

SEABOARD
FINANCE COMPANY

COMMON STOCK DIVIDEND

77th Consecutive Quarterly Payment

The Board of Directors of Seaboard Finance Co. declared a regular quarterly dividend of 45 cents a share on Common Stock payable July 10, 1954 to stockholders of record June 17, 1954.

PREFERRED STOCK DIVIDENDS

The directors also declared regular quarterly dividends of 53 cents a share on $2.12 Convertible Preferred Stock, and $1.43¾ on the $5.75 Sinking Fund Preferred Stock. All preferred dividends are payable July 10, 1954 to stockholders of record June 17, 1954.

A. E. WEIDMAN
Treasurer

April 22, 1954

THE FLINTKOTE COMPANY

30 ROCKEFELLER PLAZA — FLINTKOTE PROTECTION — NEW YORK 20, N. Y.

A quarterly dividend of $1.00 per share has been declared on the **$4 Cumulative Preferred Stock** payable June 15, 1954 to stockholders of record at the close of business June 1, 1954.

A quarterly dividend of $.50 per share has been declared on the **Common Stock** payable June 10, 1954, to stockholders of record at the close of business May 27, 1954.

CLIFTON W. GREGG,
Vice-President and Treasurer

May 5, 1954

DREWRYS

A dividend of thirty-five (35) cents per share for the second quarter of 1954 has been declared on the common stock, and the regular quarterly dividend on the 5¼% cumulative preferred stock of this company, both payable June 10, 1954 to stockholders of record at the close of business on May 25, 1954.

Drewrys Limited U. S. A., Inc.
South Bend, Indiana
T. E. JEANNERET,
Secretary and Treasurer

PEPPERELL FABRICS

PEPPERELL MANUFACTURING COMPANY

Boston, April 30, 1954

DIVIDEND NOTICE

A regular quarterly dividend of Seventy-five Cents (75¢) per share has been declared payable May 15, 1954, to stockholders of record at the close of business May 8, 1954.

Checks will be mailed by the Old Colony Trust Company of Boston, Dividend Disbursing Agents.

PAUL E. CROCKER, *Secretary*

partly from petroleum or natural gas hydro-carbons.

PROCESSING INDUSTRIES are those industries which manufacture chemicals and allied products. This group also includes those industries which use chemicals and chemical processes in manufacturing their product (*e.g.*, rayon, paper, glass, rubber, petroleum refining).

SYNTHETIC RESINS are the manufactured substances from which PLASTICS are made.

SYNTHESIS is the building of a chemical compound by the union of its parts.

UPGRADING is commercial synthesis which adds value, or economic importance, to a chemical. For example, petroleum is upgraded into petrochemicals, which are in turn upgraded to plastics, etc.

ON THE BOOKSHELF

The Old Country Store

"Flies swarmed around the molasses barrel and there was never a mosquito bar to keep them off. There was tea in chests, packed in lead foil and straw matting with strange markings; rice and coffee spilling out on the floor . . . ; rum and brandy; harness and whale oil." This is the stuff of which nostalgia for the "good old days" is made. The book is a storehouse of sight and smell and anecdote and will bring delighted recognition from the generation that remembers the country store. For those who were brought up in the era of clean and sanitary shopping centers, it will provide a fine historical background of Americana (by Gerald Carson, Oxford University Press, New York, 1954, $5).

Interlingua A Prime Vista

Interlingua means interlanguage, a language in between. It stands as a neutral between the languages descended from or influenced by Latin. It mediates between French, Spanish, Portuguese, Italian, English and German by embodying what they have in common and omitting what differentiates them. This book teaches how to read Interlingua by the use of pictures, much as a child's first primer. With only a background of school Latin, French or Spanish, Interlingua looks familiar and can be easily read (by Alexander Gode, Storm Publishers, Inc., New York, N. Y., 1954, $2).

The Art Of Contrary Thinking

The Theory of Contrary Opinion has been developed by the author during his years of writing about the stock market. The theory is simply nonconformity in thinking. Try to ascertain where popular opinion stands on a certain political or economic question, then think in a contrary channel. The crowd or mob does not really think at all. It acts emotionally and popularly, and therefore is often wrong. On this premise the author has written a most interesting book holding his theory up to the light of historical mob manias and stock market breaks (by Humphrey B. Neill, The Caxton Printers, Ltd., Caldwell, Idaho, 1954, $1).

Better Sales Through Credit

This volume throws a new light on the credit department: a stimulant to increased profits and sales. The study begins where the science of credit stops, venturing boldly into a consideration of the art of credit. Each step in the thesis of credit as an important sales technique is backed up with case histories, illustrating how sales and profits have flourished under the intelligent application of the author's theories (by Joseph L. Wood, Vantage Press, Inc., New York, N. Y., 1954, $3).

Regularization of Business Investment

This volume contains the papers and appraisals which were presented at a Conference of the Universities-National Bureau for Economic Research to explore the subject of what private businessmen could do toward maintaining high levels of productive employment through regularization of business investment. All of the essays in this volume pertain to whether the responsibility for another depression should be left entirely to government or whether private business can assume a leading role through regularization of investment expenditures. No conclusions were reached by the Conference, but the subject was thought-provoking and should be stimulating to all businessmen as well as economists (Princeton University Press, Princeton, N. J., 1954, $8).

Esso

STANDARD OIL COMPANY
(INCORPORATED IN NEW JERSEY)

The Board of Directors has declared a

Cash Dividend on the capital stock of $1.15 per share on April 29, 1954. This dividend is payable on June 11, 1954, to stockholders of record at the close of business on May 10, 1954.

30 Rockefeller Plaza, New York 20, N.Y.

BOOKLETS

Valuable booklets are published by many concerns and made available free to interested businessmen. The best of these on matters of wide interest are listed as a service to FORBES *readers. Address your request, by number, to: Subscriber Service Dept.,* FORBES *Magazine, 80 Fifth Avenue, New York 11, N. Y.*

291. THIS WE BELIEVE ABOUT EDUCATION: New York parents were recently alarmed by a series of newspaper articles on vandalism and the break-down of discipline in schools. Here, the educational committee of the National Association of Manufacturers discusses—soundly, and with considered thought—the purposes of education in America, the responsibilities of educators, and similar topics that will be of interest to any parent with a child of school age (32 pages).

292. WHAT THE AIRCRAFT INDUSTRY MEANS TO EVERY AMERICAN: Have you an investment in aircraft stocks, or are you thinking about making one? This booklet describes the problems the aircraft industry has met in a feast-and-famine past, presents some little-known facts about the part the industry is now playing in our national life. Also tells of the part aviation is playing in American defense, and of some of its plans for the future (10 pages).

293. DEFENSE AGAINST RECESSION: Are we coming out of the recession or going into it more deeply? This booklet, prepared by the Committee for Economic Development, contains enough information about economic laws so that the investor may be able to decide for himself. It is not a blueprint for action, but rather a clarification of the nature of the problem and ways in which solutions may be found. For reference, the committee used extensive reports on such key factors as business policy, public works, housing policy, state and local finance and Federal budget policy (53 pages).

294. ONIONS: A report on the market situation in onions, which the commodities investor might well look into. Onions, compared with other food commodities, have been selling at about their all-time low. Their price level, consequently, invites inquiry as to whether they are a "buy." In the past, large crop years (the 1953 onion crop was the second-largest in history) have been followed by a cutback in production. Thus considerably higher onion prices may—or may not—be in store (10 pages).

295. SAFETY FOR YOU: Makes valuable reading for anyone who works in a plant or does week-end work around the house. It contains valuable rules of safety on such tools as hammers, screwdrivers, scrapers, files and wrenches, as well as various types of machinery. In these times, when so many people are doing unfamiliar work around the house, this booklet is an invaluable guide (34 pages).

AIR REDUCTION COMPANY
INCORPORATED
60 East 42nd Street, New York 17, N. Y.

148th CONSECUTIVE
COMMON STOCK DIVIDEND

The Board of Directors has declared a regular quarterly dividend of 35¢ per share on the Common Stock of the Company, payable on June 5, 1954 to holders of record on May 18, 1954 and the tenth regular quarterly dividend of $1.125 per share on the 4.50% Cumulative Preferred Stock, 1951 Series, of the Company, payable June 5, 1954 to holders of record on May 18, 1954.

AIRCO

T. S. O'BRIEN
Secretary

April 28, 1954

Harbison-Walker Refractories Company

PITTSBURGH PENNSYLVANIA

April 29, 1954

Board of Directors has declared for quarter ending June 30, 1954 DIVIDEND of ONE and ONE-HALF (1½%) PER CENT or $1.50 per share on PREFERRED STOCK, payable July 20, 1954 to shareholders of record July 6, 1954.

Also declared a DIVIDEND of FIFTY CENTS per share on COMMON STOCK, payable June 1, 1954 to shareholders of record May 10, 1954.

G. F. CRONMILLER, JR.
Vice President and Secretary

AMERICAN-Standard

PREFERRED DIVIDEND
COMMON DIVIDEND

A quarterly dividend of $1.75 per share on the Preferred Stock has been declared, payable June 1, 1954 to stockholders of record at the close of business on May 25, 1954.

A dividend of 25 cents per share on the Common Stock has been declared, payable June 24, 1954 to stockholders of record at the close of business on June 1, 1954.

AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
JOHN E. KING
Vice President and Treasurer

UNION CARBIDE
AND CARBON CORPORATION
UCC

A cash dividend of Fifty cents (50¢) per share on the outstanding capital stock of this Corporation has been declared, payable June 1, 1954 to stockholders of record at the close of business May 3, 1954.

KENNETH H. HANNAN,
Secretary and Treasurer

CONTINENTAL CAN COMPANY, Inc.

A regular quarterly dividend of sixty cents (60¢) per share on the common stock of this Company has been declared payable June 15, 1954, to stockholders of record at the close of business May 25, 1954.

LOREN R. DODSON, *Secretary.*

Weavers of quality fabrics for over 100 years
PACIFIC MILLS

A dividend of thirty-five cents (35¢) per share has been declared, payable May 15, 1954 to stockholders of record at the close of business May 1, 1954.

DWIGHT B. BILLINGS, *Treasurer*
Boston, Mass., April 20, 1954

Common and Preferred DIVIDEND NOTICE

May 3, 1954

The Board of Directors of the Company has declared the following quarterly dividends, all payable on June 1, 1954, to stockholders of record at the close of business May 12, 1954:

Security	*Amount per Share*
Preferred Stock, 5.50% First Preferred Series	$1.37½
Preferred Stock, 4.75% Convertible Series	$1.18¾
Preferred Stock, 4.50% Convertible Series	$1.12½
Common Stock	$0.25

Secretary

TEXAS EASTERN Transmission Corporation
SHREVEPORT LOUISIANA

THOUGHTS

ON THE BUSINESS OF LIFE

To act with common sense according to the moment, is the best wisdom I know; and the best philosophy is to do one's duties, take the world as it comes, submit respectfully to one's lot; bless the goodness that has given us so much happiness with it, whatever it is; and despise affectation. —WALPOLE.

Loyalty is a major force making for unity in any life—even in the existence of a civilization. . . . It gives point and flavor, most of all meaning, to a life or a culture. —HARMON M. GEHR.

The supreme belief of our society is the dignity and freedom of the individual. To the respect of that dignity, to the defense of that freedom, all effort is pledged.
—DWIGHT D. EISENHOWER.

Reason unites us, not only with our contemporaries, but with men who lived two thousand years before us and with those who will live after us.
—LEO TOLSTOY.

Economy does not consist in saving the coal, but in using the time while it burns. —EMERSON.

He only does not live in vain, who employs his wealth, his thought, his speech to advance the good of others.
—HINDU MAXIM.

Think all you speak, but speak not all you think. Thoughts are your own; your words are so no more. —DELANY.

Choose always the way that seems the best, however rough it may be; custom will soon render it easy and agreeable. —PYTHAGORAS.

Peace is not merely an absence of war. It is also a state of mind.
—JAWAHARLAL NEHRU.

The works of nature and the works of revelation display religion to mankind in characters so large and visible that those who are not quite blind may in them see and read the first principles and most necessary parts of it and from thence penetrate into those infinite depths filled with the treasures of wisdom and knowledge. —JOHN LOCKE.

As there is no worldly gain without some loss, so there is no worldly loss without some gain. If thou hast lost thy wealth, thou hast lost some trouble with it. If thou art degraded from thy honor, thou art likewise freed from the stroke of envy. If sickness hath blurred thy beauty, it hath delivered thee from pride. Set the allowance against the loss and thou shalt find no loss great. He loses little or nothing who reserves himself. —QUARLES.

Your levelers wish to level down as far as themselves. But they cannot bear leveling up to themselves. They would all have some people under them. Why not then have some people above them? —JOHNSON.

Communism possesses a language which every people can understand. Its elements are hunger, envy, and death.
—HEINE.

All anger is not sinful, because some degree of it, and on some occasions, is inevitable. But it becomes sinful and contradicts the rule of Scripture when it is conceived upon slight and inadequate provocation, and when it continues long. —PALEY.

The art of progress is to preserve order amid change and to preserve change amid order.
—ALFRED N. WHITEHEAD.

Some relaxation is necessary to people of every degree; the head that thinks and the hand that labors must have some little time to recruit their diminished powers. —BERNARD GILPIN.

Besides the pleasure derived from acquired knowledge, there lurks in the mind of man, and tinged with a shade of sadness, an unsatisfactory longing for something beyond the present—a striving toward regions yet unknown and unopened. —HUMBOLDT.

There is no trifling with nature; it is always true, grave and severe; it is always in the right, and the faults and errors fall to our share. It defies incompetency, but reveals its secrets to the competent, the truthful, and the pure.
—GOETHE.

Trickery and treachery are the practices of fools that have not wits enough to be honest.
—BENJAMIN FRANKLIN.

The empires of the future are the empires of the mind.
—WINSTON CHURCHILL.

When I'm getting ready to reason with a man, I spend one-third of my time thinking about myself and what I am going to say—and two-thirds thinking about him and what he is going to say. —ABRAHAM LINCOLN.

It is not enough that you form, and even follow the most excellent rules for conducting yourself in the world; you must, also, know when to deviate from them, and where lies the exception.
—GREVILLE.

Contemporaries appreciate the man rather than the merit; but posterity will regard the merit rather than the man.
—COLTON.

Anxiety is the poison of human life; the parent of many sins and of more miseries. In a world where everything is doubtful, and where we may be disappointed, and be blessed in disappointment, why this restless stir and commotion of mind? Can it alter the cause, or unravel the mystery of human events? —BLAIR.

Thinking is hard work.
—THOMAS A. EDISON.

All truly wise thoughts have been thought already thousands of times; but to make them truly ours, we must think them over again honestly till they take firm root in our personal experience. —GOETHE.

More than 3,000 selected "Thoughts" are available in a 544-page book. Regular edition, $5. Deluxe edition, handsomely boxed, $7.50.

A Text . . .

Sent in by Mrs. Edwin J. Prior, Mendham, N. J. What's your favorite text? A Forbes book is presented to senders of texts used.

Charge them that are rich in this world, that they be not highminded, nor trust in uncertain riches, but in the living God, who giveth us richly all things to enjoy.
—I TIMOTHY 6: 17

Powerful proof!

PLENTIFUL ELECTRIC POWER is the lifeblood of industry today. To help provide ample power for continuing industrial growth in the modern Southland, many new coal-burning power plants were completed in the latter part of 1953 along the lines of the Southern Railway System. Still others are now under way or planned for the immediate future.

These new or enlarged power plants alone will consume a total of more than 13 million tons of coal annually. This is only one million tons less than *all* the coal we handled in 1953—and more than three times the total coal tonnage originating on the Southern in that year.

***More* coal to make *more* power to feed *more* industry! *Power*ful proof that big things are happening in the South today.**

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Harry A. DeButts
President

LOOK SOUTH
LOOK AHEAD

SOUTHERN
RAILWAY SYSTEM
WASHINGTON, D. C.

The Southern Serves the South

HYPO FOR HYBRIDS

To give nitrogen-hungry corn and other crops the plant food that boosts yields and improves quality, today's farmer is relying increasingly on anhydrous ammonia. Ammonia not only furnishes his current crop with an abundance of nitrogen, but provides exceptional carry-over effect on the next crop.

One of the most economical sources of plant-food nitrogen, ammonia is also quick and easy to apply. Applicators, mounted on tractors, inject ammonia gas into the ground. Here, the gas combines instantly with clay particles in the soil and is released gradually to meet the needs of growing plants.

Nitrogen at low cost through ammonia is but one of the ways in which Mathieson helps farmers realize more from their land. Mathieson's modern Ammo-Phos® fertilizers supply the major plant foods in concentrated, highly available forms. Mathieson portable irrigation systems play an important part in increasing crop yields during dry weather. And Mathieson insecticides, herbicides, and fungicides help assure a bigger harvest. Combined with good farm management, chemicals hold the answer to the problem of providing food for 25% more people from the same acreage within the next generation.

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CHEMICAL PROGRESS WEEK-MAY 1952

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